

A taxonomic revision of the creeping triggerplants (Stylidiaceae: *Stylidium* sect. *Appressae*) from southern Australia

¹Allen Lowrie, ²Allan H. Burbidge and ³Kevin F. Kenneally

¹6 Glenn Place, Duncraig, Western Australia 6023

²Wildlife Research Centre, Department of Conservation and Land Management,
PO Box 51, Wanneroo, Western Australia 6946

³Science Publications Unit, Corporate Relations, Department of Conservation and Land Management,
Locked Bag 29, Bentley Delivery Centre, Western Australia 6983

Abstract

Lowrie, A., Burbidge, A.H. & Kenneally, K.F. A taxonomic revision of the creeping triggerplants (Stylidiaceae: *Stylidium* sect. *Appressae*) from southern Australia. *Nuytsia* 13(1): 89–157 (1999). Twenty-three species of creeping triggerplants from southern Australia are recognized, including four new species, *S. flagellum*, *S. pingrupense*, *S. pseudosacculatum* and *S. warriedarensis* Lowrie, Burbidge & Kenneally; two new names, *S. cilium* Lowrie, Burbidge & Kenneally, *S. megacarpum* Lowrie, Burbidge & Kenneally; two new combinations *S. septentrionale* (Mildbr.) Lowrie, Burbidge & Kenneally and *S. diplectroglossum* (R. Erickson & J.H. Willis) Lowrie, Burbidge & Kenneally; and four species recalled from synonymy, *S. cygnorum* W.V. Fitzg., *S. eriopodum* DC., *S. sacculatum* R. Erickson & J.H. Willis and *S. stowardii* M. Scott. The creeping triggerplants presented here belong in subg. *Nitrangium* Endl. sect. *Appressae* Mildbr. All are described and illustrated. A key for these taxa is provided.

Introduction

This paper presents a taxonomic revision of those species of *Stylidium* Swartz (Stylidiaceae) called ‘creeping triggerplants’ by Erickson (1958). All species in the creeping triggerplant group have leafy stems with appressed or spreading leafy terminal rosettes forming a compact or spreading tangled mat, usually raised slightly above the ground on aerial roots, which are referred to here as ‘stilt roots’. Pate *et al.* (1984) described a variety of plants with this type of habit, which they termed ‘stilt growth habit’, including four *Stylidium* species, two of which, *S. bulbiferum* and *S. repens* are presented here because they are creeping triggerplants. Creeping triggerplants have swellings present on the stems at the ends of seasonal growth increments; we are using the term ‘rosette nodes’ for these.

At the time of the comprehensive review of the genus by Mildbraed (1908), eight of the species recognized by us were known, and these were dispersed between two subgenera and four sections. By the time of Erickson’s (1958) overview of the genus, many more species were known, particularly as a result of Erickson’s extensive field work in south-western Australia. This new knowledge led her to believe that Mildbraed’s (1908) classification was artificial and she proposed (although not in a

formal taxonomic sense) a completely new arrangement of species within the genus. Her changes included placing all the creeping triggerplants, by then totalling 11 species, into a single group.

We have followed Erickson's (1958) more natural classification with some modification, as outlined below. We recognize 23 species of creeping triggerplants, 22 from south-western Australia and one from Kangaroo Island, South Australia.

Materials and methods

This revision is based on extensive field collecting, biosystematic studies and examination of herbarium material. All three authors have collected widely throughout the range of the creeping triggerplants in Western Australia, and Burbidge has also done some field observations on Kangaroo Island, South Australia.

For biosystematic studies, live material was collected and cultivated at the University of Western Australia, chromosome numbers were counted and many intra-specific and inter-specific crosses were conducted in the glasshouse (Burbidge & James 1991, A.H. Burbidge, unpubl. data).

Lowrie also collected fresh material, which was used either for preparation of voucher specimens or to establish cultivated collections for further study, and spirit materials. Morphological descriptions were drawn up using dried, spirit, fresh and cultivated material. Illustrations were drawn from fresh and spirit material.

All *Stylidium* collections in PERTH have been examined. Burbidge and Kenneally examined collections in AD, MEL and NSW and Kenneally examined material in the following European and American herbaria: B, BM, C, G, GOET, HAL, HBG, K, L, LD, M, NY, P, S, UPS. Type material in these herbaria was photographed.

All collections are cited for taxa that are poorly collected. For other taxa, specimens cited have been selected to represent the known geographic range.

Sharr (1996) has been used as the source to establish the meanings for the scientific names of taxa previously described.

Taxonomy

Stylidium sect. **Appressae**

Stylidium sect. *Appressae* Mildbr. (Mildbraed 1908: 81, 84). Type: *Stylidium adpressum* Benth.

Stylidium sect. *Repentes* Mildbr. (Mildbraed 1908: 41, 49). Type: *Stylidium repens* R. Br.

Creeping plants forming a compact or spreading tangled mat; usually raised above the ground on stilt roots developed from the rosette nodes; leafy tufts (*S. uniflorum*) or leafy stems arising from the rosette nodes, leaves deciduous by late summer except for terminal clusters of dormant juvenile leaves; internodes stoloniferous, either a modified stem with few leaves on or just below the soil surface

(*S. uniflorum*) or the product of the older leafless ascending or procumbent stems; stem leaves (in active growth) appressed or spreading, persistent or with some or all caducous by anthesis; leaves of the terminal leafy rosettes appressed, compact or spreading and persistent at anthesis; inflorescences arising from the terminal rosettes or basal leafy tufts.

Notes. Mildbraed (1908) and Erickson (1958) included *Stylidium merrallii* (F. Muell.) T.A. Durand & B.D. Jackson (1896) as a creeping triggerplant. However, *S. merrallii* was described from incomplete material and erroneously associated with these species. This species was once declared under the Western Australian Wildlife Conservation Act as 'presumed to be extinct' before it was recollected and its morphology and life form studied in the field and cultivation. This established that it was not a creeping triggerplant (Kenneally & Lowrie 1994a).

Bentham (1868) did not group the creeping triggerplants together except to place two of them (*S. bulbiferum* and *S. breviscapum*) in his series *Thyrsiformes* Benth., a group comprised mainly of tufted species. Mildbraed (1908) placed five creeping species in this group, which he raised to the sectional level, but still included a larger number of tufted species in the group. Mildbraed also named two new sections, each comprising a single creeping species, and placed one further creeping species (*S. tepperianum*) in yet another section, sect. *Lineares* (Benth.) Mildbr. together with ten tufted species.

Erickson (1958) placed all the creeping triggerplants together but did not indicate a formal taxonomic category for them. We are nominating one of Mildbraed's groups, sect. *Appressae* for all species of creeping triggerplants and placing his other group, sect. *Repentes* into synonymy.

Key and synopsis of the creeping triggerplant groups

When closely related species are placed together, the 23 creeping triggerplants fall into nine groups. These groups are keyed out then outlined below. For each group the main characteristics, known chromosome numbers and member species are given.

1. Corolla lobes vertically paired **Group G**
1. Corolla lobes laterally paired
 2. Throat appendages 4–8
 3. Inflorescence of solitary terminal flowers
 4. Leaves of the flowering stems spreading at the apex **Group E**
 4. Leaves of the flowering stems compact and appressed at the apex **Group F**
 3. Inflorescence multiflowered – or never consistently 1-flowered
 5. Inflorescence a 1-sided raceme with 1–6 flowers. Throat appendages 8. Leaves all in dense rosettes **Group H**
 5. Inflorescence a 4–10-flowered dichasium. Throat appendages 6. Leaves extending along stems as well as in rosettes **Group A**
 2. Throat appendages 2 or absent
 6. Leaves long-linear, in dense sub-basal tufts. Peduncles mostly 1-flowered, pilose **Group I**
 6. Leaves linear to narrowly ovate to spatulate, extending along the stems and in rosettes borne well above the ground. Peduncles 1–15-flowered, if mostly 1-flowered then glandular

7. Peduncle with both long and short glandular hairs **Group D**
7. Peduncle pilose and/or glandular but not with two types of glandular hairs
8. Leaves terete in the distal part, the hyaline margin absent or restricted to base, apical mucro remaining small and blunt on those leaves produced at anthesis **Group B**
8. Leaves flattened in distal part, the hyaline margin serrate, ciliate or just ragged near the base, apical mucro sharp on those leaves produced at anthesis **Group C**

Group A

Leaves ovate-lanceolate, with translucent white hyaline, apical mucro sharp and basal spur prominent, leaves appressed or spreading along the stems, spreading at the apex. *Inflorescence* a compound dichasium, 4–10-flowered; peduncle glandular. *Throat appendages* 6. *Labellum* with basal appendages and apical point.

1. *Stylidium adpressum* n = 15
2. *S. cygnorum* n = 15

Group B

Leaves linear, terete in the upper part with translucent white hyaline absent – hyaline sometimes present near the base, apical mucro very small and blunt, leaves semi-appressed along the stems, spreading at the apex. *Inflorescence* at the beginning corymbose or a crowded indeterminate umbel with flowers almost sessile or forming a compact panicle when distinctly pedicellate, peduncle bearing pilose hairs sometimes tipped with a gland. *Throat appendages* absent.

3. *S. breviscapum* n = 13
4. *S. eriopodum* n = 13
5. *S. neglectum* n = 13
6. *S. stowardii* n = 13

Group C

Leaves linear-lanceolate, marginal translucent white hyaline serrate, ciliate or just ragged near the base, apical mucro sharp on leaves produced at anthesis – the presence of which are sometimes few – mixed with those that are blunt, leaves semi-erect along the stems in active growth, spreading at the apex. *Inflorescence* peduncle arising from each apical leafy rosette mostly solitary when bearing a multiflowered panicle but peduncles more than one when 1-flowered, peduncle(s) glandular, sparsely glandular or glandular-pilose. *Throat appendages* 2 or absent. *Labellum* boss either with basal appendages or bearing a few glands instead.

7. *S. bulbiferum* n = 14
8. *S. burbridgeanum* n = 14
9. *S. cilium* n = 14
10. *S. megacarpum* n = 14
11. *S. septentrionale* n = 14

Group D

Leaves linear, clavate or spatulate, bearing a white crenate, serrulate or irregularly serrate-laciniate hyaline and a longitudinal ridge-like keel, apical mucro sharp, shortly pointed or absent, leaf base rounded with opposite margins winged-serrate. *Inflorescence* paniculate, 2–15-flowered, peduncle bearing long and short glandular hairs. *Throat appendages* absent. *Labellum* with basal appendages and shortly pointed or bearded apex.

12. *S. dielsianum* n = 15
13. *S. induratum* chromosome number unknown
14. *S. warriedarensis* n = 30

Group E

Leaves linear or lanceolate, with translucent white hyaline, apical mucro sharp and basal spur prominent, leaves appressed along the stems, spreading at the apex. *Inflorescence* peduncle(s) arising from each apical leafy rosette 1-flowered, peduncles glandular or pilose glandular. *Throat appendages* 6 or 8. *Labellum* with or without basal appendages but apical point always present.

15. *S. diplectroglossum* n = 15
16. *S. flagellum* n = 15
17. *S. pingrupense* n = 30
18. *S. repens* n = 15

Group F

Leaves lanceolate or lanceolate-lageniform, with translucent white hyaline, apical mucro sharp and basal spur prominent, leaves appressed along the stems, compact and appressed at the apex. *Inflorescence* peduncle solitary and 1-flowered at the apex of each leafy stem, peduncle pilose when almost sessile, pilose and densely glandular when long. *Throat appendages* 4 or 6. *Labellum* with or without basal appendages but apical point always present.

19. *S. pseudosacculatum* n = c. 30
20. *S. sacculatum* chromosome number unknown

Group G

Leaves lanceolate, with translucent white hyaline bearing irregular spike-like teeth, apical mucro sharp and basal spur prominent, leaves appressed along the stems, compact and not spreading at the apex; inflorescence racemose, 2–5-flowered; peduncle densely glandular; corolla lobes vertically-paired. *Throat appendages* bump-like on the petal base folds. *Labellum* with apical point but without basal appendages.

21. *S. choreanthum* n = 15

Group H

Leaves linear-lanceolate, with translucent white serrate hyaline and sharp apical mucro, leaves of the apical rosettes spreading. *Inflorescence* a 1-sided raceme, 1–6-flowered, peduncle bearing short

glandular hairs. *Throat appendages* 8. *Labellum* without basal appendages but with apical point and margins winged.

22. *S. tepperianum* chromosome number unknown

Group I

Leaves linear, with translucent white irregular erose-serrate hyaline and blunt apical mucro, rosettes arising from the soil and forming a leafy tuft. *Inflorescence* peduncle pilose, mostly 1-flowered and arising from the base of the leafy tuft. *Throat appendages* absent. *Labellum* with basal appendages.

23. *S. uniflorum* n = 14

Key to the creeping triggerplant species

- 1 Inflorescence a 1-sided raceme. Occurring in South Australia (Kangaroo Island) **22. *S. tepperianum***
- 1: Inflorescence not a 1-sided raceme. Occurring in Western Australia (south-west region) 2
- 2 Rosette nodes and adjoining stems below soil surface **23. *S. uniflorum***
- 2: Rosette nodes and adjoining stems above soil surface 3
- 3 Corolla lobes vertically paired **21. *S. choreanthum***
- 3: Corolla lobes laterally paired 4
- 4 Inflorescence mostly unflowered 5
- 4: Inflorescence multiflowered 11
- 5 Gynostemium with dilated cunabulum (see Figure 19F,G) in the upper portion 6
- 5: Gynostemium narrow in the upper portion 7
- 6 Hypanthium base hidden within the apical leafy rosette. *Labellum* without basal appendages **20. *S. sacculatum***
- 6: Hypanthium mostly free of the apical leafy rosette. *Labellum* with basal appendages **19. *S. pseudosacculatum***
- 7 Plants with mostly rosette node clusters (lignotuber-like) on the soil surface. Hypanthium 8–20 (mostly 15) mm long **10. *S. megacarpum***
- 7: Plants with solitary rosette nodes on stilt roots scattered throughout the tangled and matted plant network above the soil surface. Hypanthium 1.5–3.5 mm long 8
- 8 Apical leafy rosette with a solitary unflowered peduncle. Corolla lobe pairs of equal size and shape; *labellum* with basal appendages 9
- 8: Apical leafy rosette with many unflowered peduncles produced in succession. Corolla lobes all of a different size and shape; *labellum* without basal appendages 10
- 9 Leaf margins entire. Hypanthium glabrous. *Throat appendages* 8 **17. *S. pingrupense***
- 9: Leaf margins hyaline irregularly serrate. Hypanthium with glandular pilose hairs. *Throat appendages* 6 **15. *S. diplectroglossum***
- 10 Stilt-rooted plants low to the ground. Leaves lanceolate, 3–5 mm long, c. 0.7 mm wide. Sepals shorter than the hypanthium at anthesis. *Labellum* apical point almost as long as the boss **18. *S. repens***

- 10: Stilt-rooted plants erect and semi-erect up to 35 cm tall. Leaves narrowly lanceolate, 5–9 mm long, c. 1 mm wide. Sepals longer than the hypanthium at anthesis. Labellum with a very small apical point **16. *S. flagellum***
- 11 Leaves bearing thickened white edges, hyaline and keel 12
- 11: Leaf margins without thickened white edges, entire or bearing a translucent white hyaline 14
- 12 Plants forming erect compact bushes 10–22 cm high (including the stilt roots). Leaves linear, hyaline margins serrate **13. *S. induratum***
- 12: Plants spreading over the soil surface, prostrate and shortly stilt rooted. Leaves spatulate or clavate, hyaline margins serrate-laciniate or crenate and/or serrulate 13
- 13 Leaves spatulate, with prominent apical mucro, lunate in section, hyaline margins irregularly serrate-laciniate. Labellum boss c. 0.4 mm wide, basal appendages c. 0.7 mm long **14. *S. warriedarensis***
- 13: Leaves clavate, with apical mucro mostly small or lacking, lenticulate in section in the lower parts, trigonal in the upper parts, hyaline margins mostly crenate, often serrulate, or a combination of both. Labellum boss c. 0.5 mm wide, basal appendages c. 1.5 mm long **12. *S. dielsianum***
- 14 Peduncle bearing non-glandular pilose hairs 15
- 14: Peduncle bearing glandular hairs 17
- 15 Labellum with apical point and basal appendages, all 5 sepals of a similar length **3. *S. breviscapum***
- 15: Labellum without apical point and basal appendages, 3 sepals longer than the other 2 16
- 16 Hypanthium sessile. Smaller sepals c. 1.2 mm long. Inflorescence including peduncle with pilose hairs **4. *S. eriopodum***
- 16: Hypanthium pedicellate. Smaller sepals c. 0.5 mm long. Inflorescence glandular with some pilose hairs on peduncle **6. *S. stowardii***
- 17 Inflorescence a narrow panicle. Hypanthium almost sessile 18
- 17: Inflorescence a compound dichasium or panicle. Hypanthium pedicellate 19
- 18 Leaves 5–15 (mostly 10–12) mm long, with a sharp apical mucro at anthesis. Hypanthium c. 6 mm long; corolla c. 11 mm wide. Labellum without apical point and basal appendages **8. *S. burbridgeanum***
- 18: Leaves 6–10 (mostly 6–7) mm long, with small blunt apical mucro at anthesis. Hypanthium c. 4.5 mm long; corolla c. 8 mm wide. Labellum with apical point and basal appendages **5. *S. neglectum***
- 19 Inflorescence a compound dichasium 20
- 19: Inflorescence a panicle 21
- 20 Leaves ovate, 2.5–4 mm long, c. 1.3 mm wide, appressed along the length of the flowering stems. Hypanthium elliptic, c. 4.5 mm long, c. 2 mm wide at anthesis. Pollen blue **1. *S. adpressum***
- 20: Leaves lanceolate, 6–8 mm long, c. 1.8 mm wide, mostly spreading, along the length of the flowering stems. Hypanthium linear-lanceolate, c. 7 mm long, c. 1.5 mm wide at anthesis. Pollen white **2. *S. cygnorum***

- 21 Terminal rosette (central) leaves (produced at anthesis) hyaline margins ciliate 9. *S. cilium*
- 21: Terminal rosette leaves (produced at anthesis) hyaline margins mostly entire or serrate 22
- 22 Leaf hyaline margins serrate. Apical leaf mucro sharp. Rosette nodes forming a compact cluster (lignotuber-like) mostly on the soil surface 7. *S. bulbiferum*
- 22: Leaf hyaline margins entire. Apical leaf mucro blunt. Rosette nodes on stilt roots above the soil surface 11. *S. septentrionale*

1. *Stylidium adpressum* Benth. (Bentham 1868: 22). – *Candollea adpressa* (Benth.) F. Muell. (Mueller 1883: 86). *Type*: 'W. Australia' [Western Australia], *Drummond* 3rd coll. n. 182. (*lecto*: K, here designated; *isoleccto*: E, K, BM, W); *Drummond* 2nd coll. n. 38 (*syn*: K).

Illustrations. Erickson (1958) colour plate 16, figure 4; page 74, plate 18, figures 1–11. Grieve & Blackall (1982) pages 760 & 763, n. 87. Mildbraed (1908) page 85, figure 24A–F.

Creeping perennial *herb*; elevated up to 4 cm above the soil surface on wiry stilt roots and branched a little so as to form a clump up to 10 cm diam. *Stems* between the rosette nodes leafless, flowering stems 1–4 cm long, scabrid in varying degrees, arising in groups of 2 or 3 (rarely more) from the rosette node junctions, mostly bearing appressed persistent leaves along their entire length and sometimes bearing semi-erect leaves in the upper portions as well, terminating in a crowded compact apical leafy rosette. *Leaves* ovate, 2.5–4 mm long, 0.8–1.3 mm wide, apical mucro translucent white, 0.1–0.2 mm long, basal spur translucent white, 0.1–0.2 mm long, hyaline margins translucent white, mostly entire with the occasional scattered serrate tooth. *Inflorescence* a compound dichasium, 2–10-flowered, 1.5–3.5 cm long including peduncle, glandular; pedicels 1.5–3 mm long; floral bracts linear, 1.5–2 mm long; bracteoles linear, alternate, 1–1.5 mm long. *Hypanthium* elliptic at anthesis, 3–4.5 mm long, 1.2–2 mm wide, 8-shaped in section, glandular. *Sepals* 5, all free to the base, ovate, 1.4–2 mm long, with translucent white entire margins and apical mucro, glandular. *Corolla* white or pink with purple marks near the base of the lobes, abaxial surface white or pale pink (yellow with pink margins in the juvenile bud stage), glandular, laterally paired; anterior lobes elliptic, *c.* 5 mm long, *c.* 3 mm wide; posterior lobes obovate-elliptic, *c.* 5 mm long, *c.* 2.3 mm wide. *Throat* appendages 6, pale greenish white, subulate, papillose, the 2 closest to the labellum *c.* 0.5 mm long, the others *c.* 1 mm long. *Labellum* boss yellowish green, ovate, *c.* 0.8 mm long, *c.* 0.3 mm wide; apical point reddish, subulate, *c.* 0.7 mm long, papillose; basal appendages reddish, subulate, *c.* 0.7 mm long, papillose. *Gynostemium* 4–6.5 mm long; anthers black, vertically paired, abaxial surface with a few long translucent white moniliform hairs along the margins, pollen from just opened anthers purple but quickly turning cobalt blue when exposed to air; stigma elliptic, *c.* 0.5 mm long, *c.* 0.3 mm wide, cushion-shaped. *Capsule* elliptic, 8-shaped in section, 5–5.5 mm long, 2–3 mm wide. *Seeds* brown, obovoid, *c.* 0.4 mm long, *c.* 0.3 mm diam., bullate. (Figure 1)

Other specimens examined. WESTERN AUSTRALIA: near Yelbeni, NW of Merredin, 17 Oct. 1887, W.E. Blackall 3546 (PERTH); 6 miles [9.6 km] W of Moora, 6 May 1974 [not in flower], A.H. Burbidge 1487 [voucher for chromosome count of $2n = 30$] (PERTH); 15.8 km N of Eradu, 30 Aug. 1974, A.H. Burbidge 1680B (PERTH); Koorda, near the drive-in theatre, 6 Sep. 1974, A.H. Burbidge 1683 (PERTH); 22 km N of Irwin, 22 Sep. 1974, A.H. Burbidge 1708 (PERTH); 1/4 mile [0.3 km] E of Harrismith, 8 Oct. 1974, A.H. Burbidge 1724 (PERTH); 29 km N of Eneabba on Three Springs Road, 28 Sep. 1975, A.H. Burbidge 2103 (PERTH); Strawberry–Walkaway road, 4.8 km S of cross-roads near breakaway, 28 Sep. 1975, A.H. Burbidge 2108 (PERTH); 3.3 km N of road which goes to quarry SW of Mt Adams, i.e. SE of Dongara, 29 Sep. 1975, A.H. Burbidge 2110 (PERTH); 5.5 km

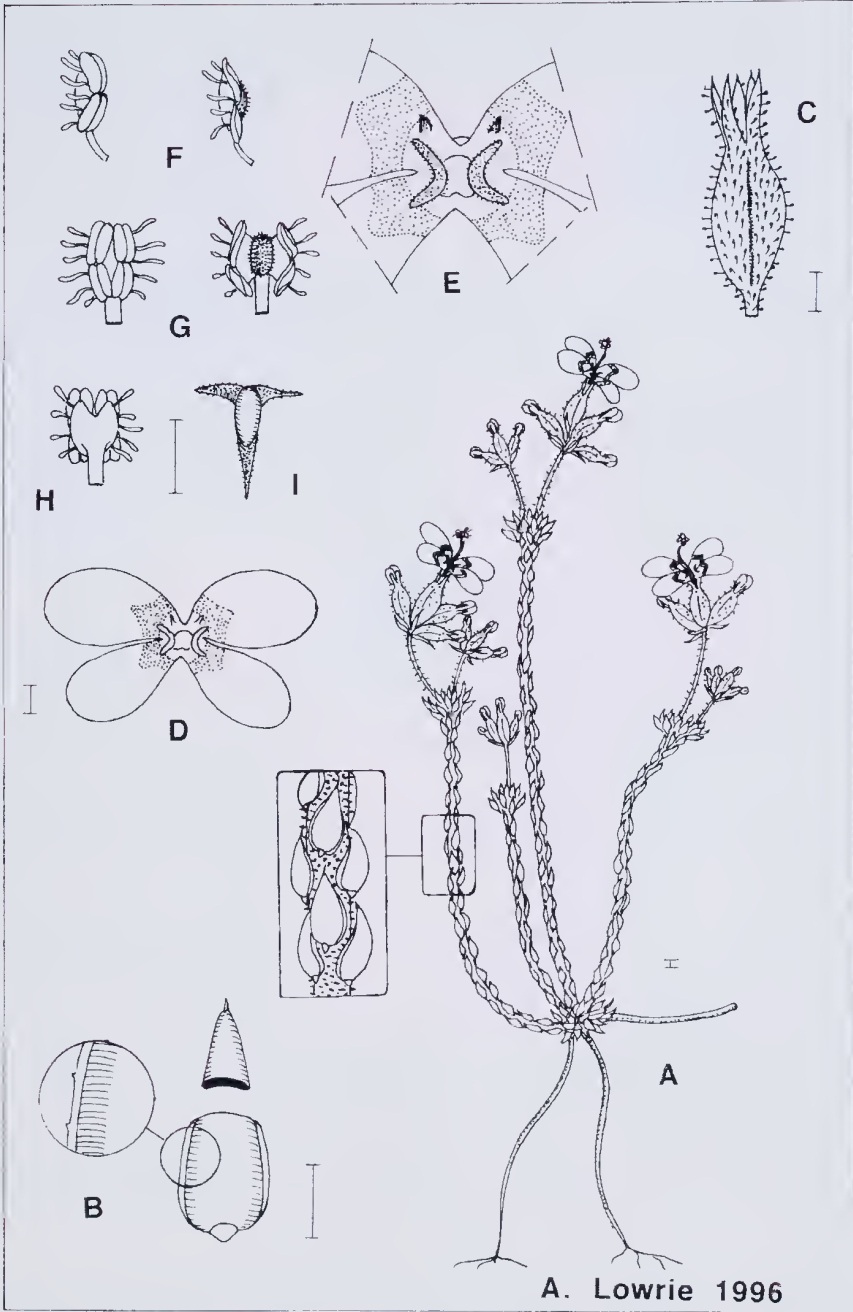


Figure 1. *Styliidium adpressum* A - habit of flowering plant with major axis enlargement, left; B - leaf; C - hypanthium; D - corolla; E - throat appendages, enlarged; F - lateral view of gynostemium tip (with stigma at right); G - face view of gynostemium tip (with stigma grown out, right); H - back of gynostemium; I - labellum. Scale bar = 1 mm. Drawn from A. Lowrie 1542 (PERTH).

S down gravel road S of gravel pit SW of Mt Adams, i.e. SE of Dongara, 29 Sep. 1975, *A.H. Burbidge* 2111 (PERTH); Brand Highway, 26 miles [41.6 km] S of turnoff to Eneabba from Dongara–Mingenev road, 29 Sep. 1975, *A.H. Burbidge* 2112 (PERTH); 25.2 km N of Kellerberrin, 5 Oct. 1975, *A.H. Burbidge* 2133 (2 sheets) (PERTH); 24 miles [38.4 km] W of Mullewa on road to Geraldton, 6 Sep. 1967, *S. Carlquist* 3005 (PERTH); Bolgart, 40 km N of Toodyay, 6 Sep. 1952, *R. Erickson s.n.* (PERTH); Tarin Rock, 10 Sep. 1962, *C.A. Gardner* 13832 (PERTH); Mullewa Plains, Sep. 1931, *C.A. Gardner & W.E. Blackall s.n.* (PERTH); 3 miles [4.8 km] S of Winchester on Geraldton Highway, Oct. 1973, *S.H. James* 73.10/7 (PERTH); entrance to Calingiri Cemetery, 15 Oct. 1988, *A. Lowrie s.n.* (PERTH); on Nangetty–Walkaway Rd, 22.2 km E of Walkaway, *A. Lowrie* 284 (PERTH); entrance to Calingiri Cemetery, 13 Sep. 1996, *A. Lowrie* 1542 (PERTH).

Distribution. Widely distributed in two contiguous regions, bordered by Northam and Kellerberrin in the south to Geraldton and Mullewa c. 400 km to the north-west; and from Kellerberrin and Merredin to Harris Smith and Tarin Rock c. 150 km to the south.

Habitat. Grows in cream coloured clayey sand, yellow sand over laterite or sandy loam on heathland with *Acacia* and *Eucalyptus* species.

Flowering period. August to October.

Chromosome number. $n = 15$ (Burbidge & James 1991).

Conservation status. A common species and currently not under threat.

Etymology. The epithet *adpressum* is from the Latin *ad* – towards and *pressus* – pressed, in reference to the leaves closely flattened or pressed along the stems below the terminal leafy rosettes.

Affinities. Its closest relative, *Stylidium cygnorum*, differs in having lanceolate leaves, a narrower hypanthium and white pollen. It also usually differs in having spreading leaves, but some specimens in the Badgingarra–Eneabba area have appressed leaves.

Notes. The *Stylidium adpressum* designated lectotype sheet housed at K has two specimens mounted in the top right corner of the sheet. These specimens have been selected because they are well presented and represent the typical size of mature plants to be found in the wild.

Mildbraed (1908: 84) misspelt this species name, *Stylidium appressum*. The MEL isoelectotype material is missing (Mair & Pescott 1969: 607; 1970: 824).

2. *Stylidium cygnorum* W. Fitzg. (Fitzgerald 1902: 16). *Type:* 'In the vicinity of Perth. – W.V.F. – Fl. Oct.–Nov.' [Perth area, Western Australia, 1901, *W.V. Fitzgerald s.n.*]. (*holo:* MEL; *iso:* PERTH 1640402, 1640410, 1640976, NSW, all ex herb. W.V. Fitzgerald).

Stylidium adpressum var. *patens* R. Erickson & J.H. Willis (Erickson & Willis 1956: 16). *Type:* from sandy heath and *Banksia* country, a mile [1.6 km] or so north of Yanchev, Western Australia, 4 October 1954, *R. Erickson s.n.* (*holo:* MEL; *iso:* PERTH 1640399, K).

Illustrations. Erickson (1958) page 74, plate 18, figures 12–13. Grieve & Blackall (1982) page 760, n. 87a.

Creeping perennial *herb*, elevated up to 8 cm above the soil surface on wiry stilt roots and branched a little to form a clump up to 10 cm diam. *Stems* between the rosette nodes leafless, flowering stems 5–10 cm long, sparsely scabrid, mostly glabrous, arising in groups of 3 or more from the rosette node junctions, bearing semi-erect and spreading persistent leaves along their length and terminating in a crowded spreading apical leafy rosette. *Leaves* lanceolate, 6–8 mm long, 0.6–1.8 mm wide, basal spur translucent white, 0.4–0.6 mm long, apical mucro 0.1–0.3 mm long, hyaline margins translucent white, irregularly serrate. *Inflorescence* a compound dichasium, 4–10-flowered, 10–30 (mostly 20–25) mm long including peduncle, glandular; pedicels 0.5–1.5 mm long; floral bracts linear, 3–4.5 mm long; bracteoles linear, 1.5–2 mm long. *Hypanthium* linear-lanceolate at anthesis, 5–7 mm long, 0.9–1.5 mm wide, 8-shaped in section, glandular. *Sepals* 5, all free to the base, ovate, 2–2.5 mm long, with translucent white minutely scarious margins and apical mucro, glandular. *Corolla* white or pink with purple marks near the base of the lobes, abaxial surface white or pinkish (yellow in the juvenile bud stage), glandular, laterally paired; anterior lobes elliptic, *c.* 5 mm long, *c.* 3 mm wide; posterior lobes obovate-elliptic, *c.* 5 mm long, *c.* 2.5 mm wide. *Throat* appendages 6, white or pink, green at the base, subulate, the 2 closest to the labellum *c.* 0.6 mm long, the others *c.* 0.8 mm long. *Labellum* boss pale green, ovate, *c.* 0.7 mm long, *c.* 0.4 mm wide; apical point red, subulate, *c.* 0.5 mm long; basal appendages red, subulate, *c.* 0.5 mm long. *Gynostemium* 5.5–6.3 mm long; anthers yellow, vertically paired, abaxial surface with long translucent white moniliform hairs along the margins, pollen white; stigma elliptic, *c.* 0.6 mm long, *c.* 0.4 mm wide, cushion-shaped. *Capsule* narrowly elliptic, 7–8.5 mm long, 1.7–2.6 mm wide, 8-shaped in section. *Seeds* rust orange, ovoid-ellipsoid, 0.45–0.5 mm long, 0.25–0.2 mm diam., papillate. (Figure 2)

Other specimens examined. WESTERN AUSTRALIA: near 32 mile [51.2 km] peg, N of Yanchep, 1 Oct. 1974, A.H. Burbidge *s.n.* (PERTH); 13 km S of Calingiri, 20 Oct. 1975, A.H. Burbidge 2175 (PERTH); 6 miles [9.6 km] W of Wyening, on road to Great Northern Highway, 20 Oct. 1975, A.H. Burbidge 2184 (PERTH); 0.4 km S of Cockleshell Gully, 15 Sep. 1976, A.H. Burbidge 2326 (PERTH); 37 mile [59.2 km] peg, Great Northern Highway, i.e. 4.8 km N of Mueheaturnoff, 27 Oct. 1976, A.H. Burbidge 2390 (PERTH); 6.1 km E of Dewar's Pool turnoff from Great Northern Highway, 27 Oct. 1976, A.H. Burbidge 2395 (PERTH); 5.5 km N of Cockleshell Gully, 28 Sep. 1977, A.H. Burbidge 2510 (PERTH); along Moore River road, just S of Regans Ford and W of the highway from Gingin to Eneabba, 6 Oct. 1974, S. Carlquist 5948 (PERTH); 3.5 km E along Mistletoe Road (N of Yanchep), 4 Oct. 1976, D. Coates *s.n.* (PERTH); Wannamal West Rd, 500 m E of Gingin–Eneabba road on Hill River scarp, 7 Oct. 1975, S.D. Hopper *s.n.* (PERTH); Lancelin–Mogumber Road, near Gingin intersection, 14 Oct. 1962, S.H. James *s.n.* (PERTH); about 2 miles [3.2 km] E of Wanneroo Rd, off Clarkson Rd, Aug. 1965, S.H. James 65.8/21 [voucher for chromosome count of $2n = 30$] (PERTH); Mt Yokine, near TV studios, Oct. 1965, S.H. James 65.10/61 [2 sheets, vouchers for chromosome count $n = 15$] (PERTH); 120 miles [192 km] N of Perth on Brand Highway, near road to Cervantes, 30 Oct. 1974, S.H. James *s.n.* (PERTH); on Jurien Bay road at turn off of first track E of Banovich Rd, 27 Oct. 1989, A. Lowrie *s.n.* (PERTH); on Yeal Swamp Rd, *c.* 0.5 km E of Lancelin Rd, Yanchep, 23 Oct. 1990, A. Lowrie 132 (PERTH); Lorian Rd, 0.5 km E of Sydney Rd, Gnaragarra, 30 Oct. 1990, A. Lowrie 142 (PERTH); on Great Northern Highway, 2 km NE of Wandena Rd (N end), Muchea, 26 Oct. 1991, A. Lowrie 441 (PERTH); Perth, 15 Nov. 1899, Dr A. Morrison *s.n.* (PERTH).

Distribution. Widely distributed in the region bordered by Perth and Calingiri in the south to Jurien and Eneabba *c.* 250 km to the north.

Habitat. Grows in white silica sand amongst heath in *Banksia* woodlands.

Flowering period. September to October.

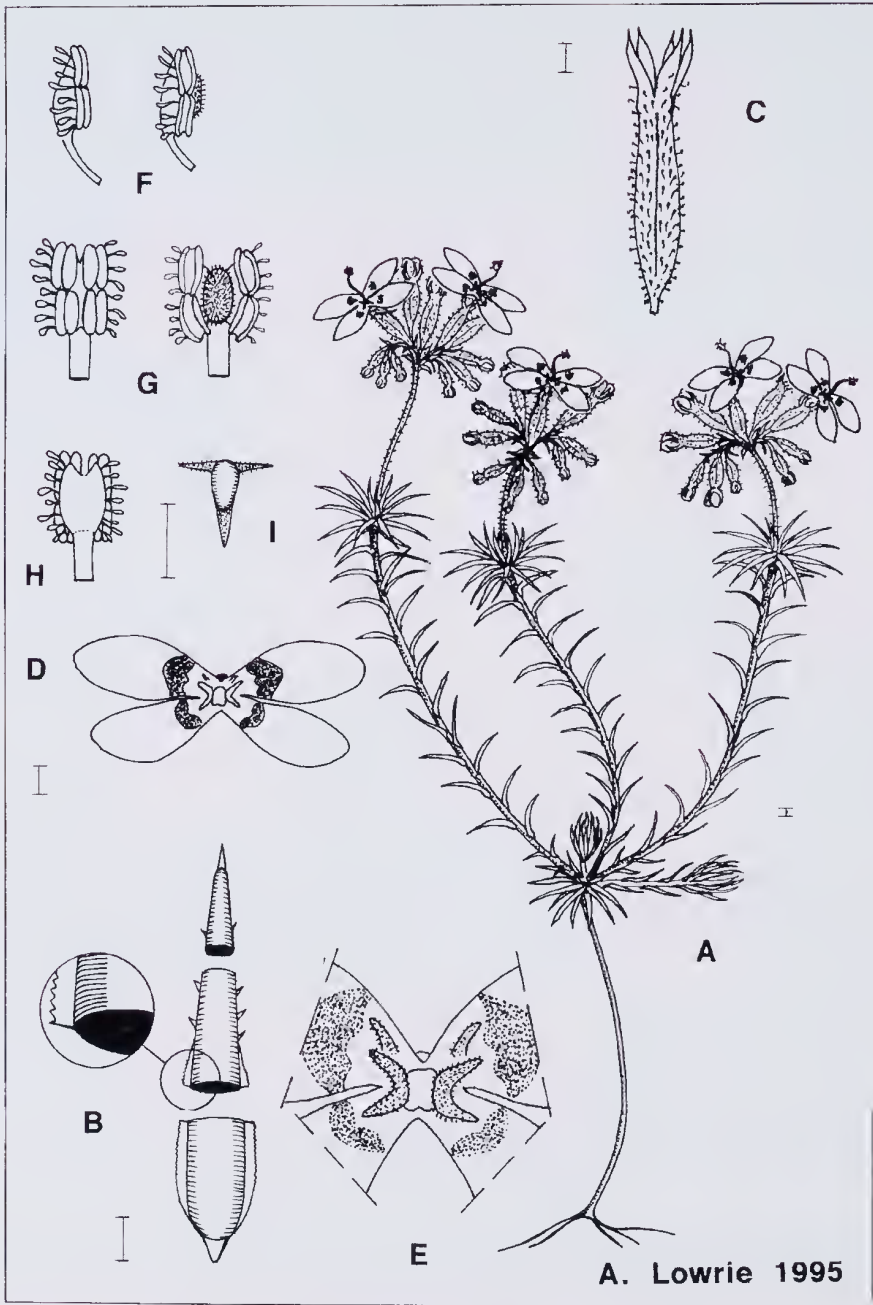


Figure 2. *Styliidium cygnorum* A - habit of flowering plant; B - leaf; C - hypanthium; D - corolla; E - throat appendages, enlarged; F - lateral view of gynostemium tip (with stigma at right); G - face view of gynostemium tip (with stigma grown out, right); H - back of gynostemium; I - labellum. Scale bar = 1 mm. Drawn from A. Lowrie 132 (PERTH).

Chromosome number. $n = 15$, $2n = 30$ (James 1979).

Conservation status. A common species in the *Banksia* woodlands north of Perth and currently not under threat.

Etymology. The epithet *cygnorum* is from the Latin *cygnus* – swan, in reference to the Swan River district where this species is found.

Affinities. Its closest relative is *Stylidium adpressum* which differs in having persistent mostly ovate leaves appressed along the length of the flowering stems; elliptic hypanthium at anthesis; and cobalt blue pollen.

3. *Stylidium breviscapum* R. Br. (Brown 1810: 572). – *Candollea breviscapa* (R. Br.) F. Muell. [as *breviscapa*] (Mueller 1883: 86). *Type:* Bay 1 south coast [Lucky Bay, Cape Le Grand, Western Australia, 1801], *R. Brown* 2608 (*lecto:* BM, here designated).

Stylidium involucreatum F. Muell. (Mueller 1859: 154). – *Stylidium breviscapum* var. *erythrocalyx* Benth. [as *breviscapus*] (Bentham 1868: 31). – *Stylidium breviscapum* var. *involucreatum* (F. Muell.) Mildbr. *nom. inval.* (Mildbraed 1908: 92). *Type:* ‘In montibus Fitzgerald Range, Mx.’ [Mt Barren Ranges, Western Australia, Maxwell] (*holo:* MEL 672624).

Illustration. Grieve & Blackall (1982) page 758, n. 86a.

Creeping perennial *herb*; elevated up to 7 cm above the soil surface by wiry stilt roots and shortly branched with leafless stems between rosette nodes to form compact clumps up to 10 cm diam. *Stems* 5–6 cm long, bearing a few persistent scattered leaves along their length, upper leaves in a terminal tuft, with 2 or 3, but sometimes more stems arising from the rosette nodes. *Leaves* linear, 5–15 mm long, 0.6–0.8 mm wide, terete in the upper part, lenticulate in section in the lower part, with a small apical blunt projection. *Inflorescence* corymbose, 2.5–4 cm long including peduncle, bearing pilose hairs tipped with minute glands, clearly pedicellate; pedicels 2–3 mm long; floral bracts linear, 3–4 mm long; bracteoles linear, 1.5–2.5 mm long. *Hypanthium* elliptic, 3.5–4.5 mm long, 1.2–1.7 mm wide, 8-shaped in section, glandular. *Sepals* 5, all free to the base, 1.6–2.5 mm long at anthesis. *Corolla* white with reddish marks near the throat, abaxial surface glandular, lobes laterally paired; anterior lobes obovate-elliptic, *c.* 4 mm long, *c.* 2 mm wide; posterior lobes obovate-elliptic, slightly curved, *c.* 5.5 mm long, *c.* 2.8 mm wide. *Throat* without appendages. *Labellum* boss ovate, *c.* 0.6 mm long, *c.* 0.3 mm wide; apical point *c.* 0.5 mm long; basal appendages subulate, *c.* 0.3 mm long, papillose. *Gynostemium* 4.5–6 mm long; anthers pale yellow, diagonally paired, abaxial surface with short translucent pale red moniliform hairs along the margins, pollen pale yellow; stigma elliptic, *c.* 0.7 mm long, *c.* 0.3 mm wide, cushion-shaped. *Capsule* narrowly elliptic, 6–8 mm long, 1.8–3 mm wide, 8-shaped in section. *Seed* rust orange, ellipsoid with 4 flat sides, slightly longitudinally twisted, *c.* 0.9 mm long, *c.* 0.4 mm diam., sparsely verrucate. (Figure 3)

Other specimens examined. WESTERN AUSTRALIA: Wittenoom Hills, 31 miles [49.6 km] NNE of Esperance, 15 Oct. 1970, *T.E.H. Aplin* 3946 (PERTH); slope of Mt Ragged, 19 Oct. 1974, *T.E.H. Aplin* 4336 (PERTH); King George’s Sound, SW Australia, Baxter [ex Allan Cunningham’s Australian Herbarium, both specimens bottom of sheet] (K); Base of Mt Ragged, Cape Arid National Park, 18 May 1975, *A.H. Burbidge* 1881 (PERTH); Esperance aerodrome, 9 Oct. 1974, *A.H. Burbidge* 1729 (PERTH); Condingup Peak, E of Esperance, 10 Oct. 1974, *A.H. Burbidge* 1734 (PERTH); Lucky Bay, E of Esperance, 10 Oct. 1974, *A.H. Burbidge* 1738 (PERTH); Mt Burdett, 26 Oct. 1975, *A.H. Burbidge* 2220

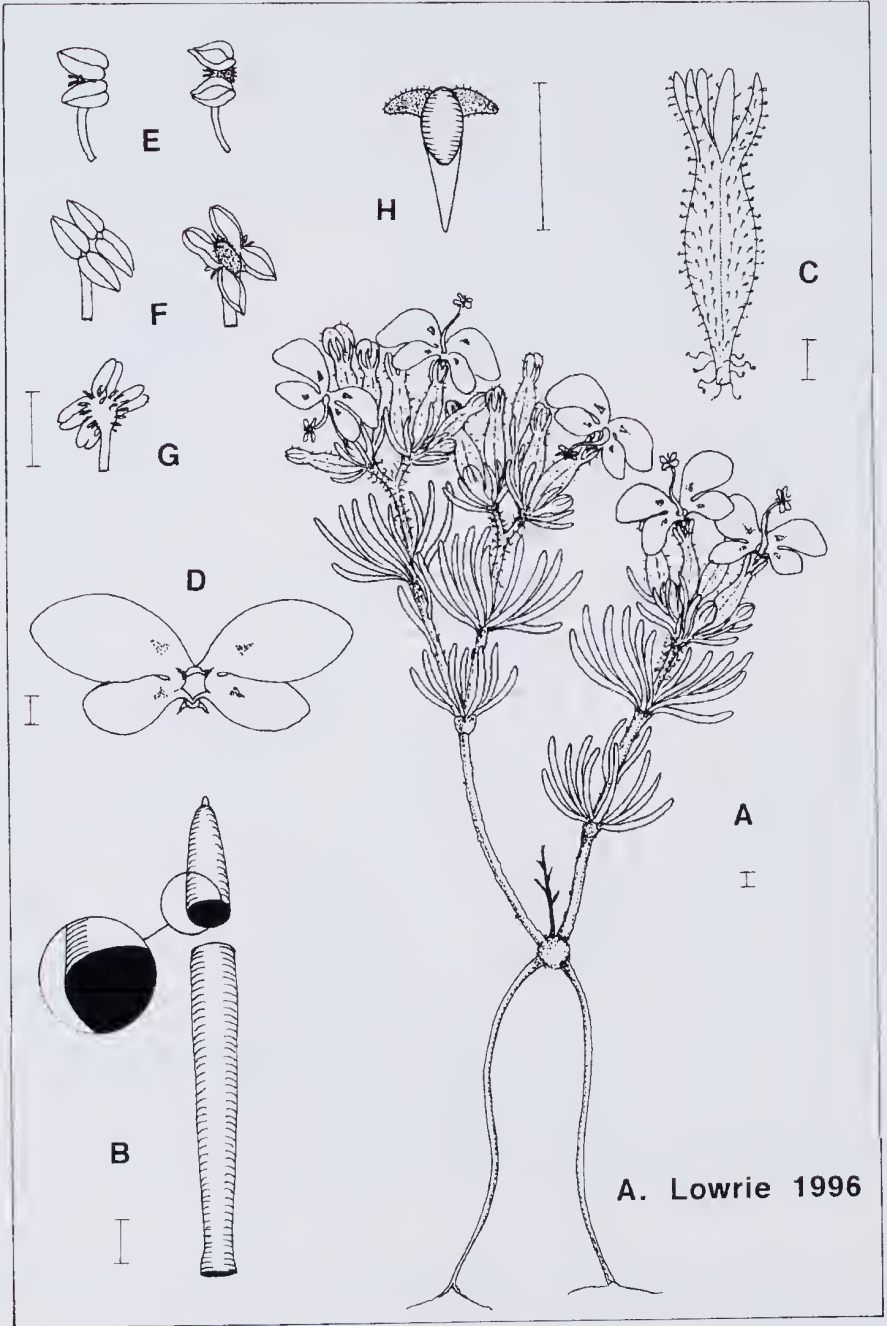


Figure 3. *Styliidium breviscapum* A - habit of flowering plant; B - leaf; C - hypanthium; D - corolla; E - lateral view of gynostemium tip (with stigma at right); F - face view of gynostemium tip (with stigma grown out, right); G - back of gynostemium; H - labellum. Scale bar = 1 mm. Drawn from A. Lowrie 1385 (PERTH).

(PERTH); 10 km SW of Wittenoom Hills, i.e. NE of Esperance, 27 Oct. 1975, *A.H. Burbidge* 2221 (PERTH); on Wittenoom Rd, 1 km NE of Plowman's Rd, which is 33 km from Esperance, 27 Oct. 1975, *A.H. Burbidge* 2222 (PERTH); Thistle Cove, E of Esperance, 27 Oct. 1975, *A.H. Burbidge* 2225 (PERTH); Washpool Howick Hill, between the hill and the road, i.e. on NE side of hill, 28 Oct. 1975, *A.H. Burbidge* 2226 (PERTH); Mt Ragged, Cape Arid National Park, 28 Oct. 1975, *A.H. Burbidge* 2230 (PERTH); base of Mt Ragged, Cape Arid National Park, 29 Oct. 1975, *A.H. Burbidge* 2231 (PERTH); road, S of Munglinup, 30 Oct. 1975, *A.H. Burbidge* 2241 (PERTH); East Mt Barren, 30 Oct. 1975, *A.H. Burbidge* 2245 (PERTH); 75 km E of Ravensthorpe, 1978, *A.H. Burbidge* 2556 (PERTH); Elverton, near Ravensthorpe, 1 Oct. 1978, *A. H. Burbidge* 2557 (PERTH); 28.4 km E of Ravensthorpe, 29 Aug. 1975, *D.J. Coates s.n.* (2 sheets) (PERTH); Mt Desmond, 19 Oct. 1960, *C. A. Gardner* 12882 (PERTH); East Mt Barren, 22 Oct. 1961, *C.A. Gardner* 13682 (PERTH); Whoogarup Range, SW of Ravensthorpe, 1 Nov. 1965, *A.S. George* 7196 (PERTH); Esperance airport, Oct. 1972, *S.H. James* 72.10/28 [voucher for chromosome count of $n = 13$] (PERTH); slopes of Mount Le Grand, Oct. 1974, *S.H. James* 74.10/16 (PERTH); summit of Mt Desmond near Ravensthorpe, 10 Nov. 1995, *A. Lowrie* 1385 (PERTH); Cape Arid and Fitzgerald Ranges, *Maxwell s.n.* (K); SW end Cape Arid Range, *Maxwell s.n.* (MEL); W face of Mt Ragged to near summit, 3 Oct. 1970, *R.A. Saffrey* 1317 (PERTH) 600 metres NE of Lucky Bay, 33° 59' S, 122° 13' 30' E, 7 Oct. 1970, *I. Solomon* 295 (PERTH).

Distribution. Widely distributed in the south coastal region between Albany and Cape Arid National Park.

Habitat. Grows in sandy soils over and alongside of granite rocks in sheltered areas very near the shores of the ocean; in laterite soils in sub-coastal areas.

Flowering period. August to December.

Chromosome number. $n = 13$ recorded as *Stylidium breviscapum* var. *erythrocalyx* Benth. (Burbidge & James 1991).

Conservation status. Widely distributed and not considered to be at risk.

Etymology. The epithet *breviscapum* is from the Latin *brevis* – short and *scapus* – scape in reference to the short peduncle.

Affinities. The nearest relatives to *Stylidium breviscapum* are *S. stowardii* and *S. eriopodum*. *S. breviscapum* is distinguished from these two species by having a labellum with basal appendages and apical point; and 5 sepals all of a similar length.

Notes. The *Stylidium breviscapum* designated lectotype sheet housed at BM has been selected because it is a Robert Brown collection.

4. *Stylidium eriopodum* DC. (de Candolle 1839: 784). – *Type:* 'in Novâ-Hollandiâ ad Swan-river legit cl. Drummond ... (v.s. à cl. inv.)' [Western Australia, 1839, *J. Drummond* 547]. (*holo:* G-DC; *iso:* BM, K).

Illustrations. Erickson (1958) colour plate 16, figure 5; page 82, plate 21, figures 1–9. Grieve & Blackall (1982) page 758, n. 86 in part [inland form = *S. stowardii*]; photograph, colour plate X, centre left.

Creeping perennial *herb*; elevated up to 6 cm above the soil surface by wiry stilt roots, rosette nodes connected by branching leafless stems 8–25 mm long, forming compact clumps up to 15 cm diam. *Stems* 3–7 cm long, usually 2 or 3, but sometimes more arising from rosette nodes with persistent leaves often scattered along their length, upper leaves in a terminal tuft. *Leaves* of the terminal tuft linear, 10–35 mm long, 0.8–1 mm wide, semi-terete in the upper part, lenticulate in section in the lower part, with a small apical blunt projection; leaves along the stems linear, 2.5–5 mm long, 0.6–1 mm wide, with irregularly serrate translucent white hyaline lower margins and sharp apical micro. *Inflorescence* 2.5–5 cm long including peduncle, peduncle bearing only pilose hairs, in the early stage of anthesis forming a crowded indeterminate umbel, later in fruit elongating to form verticillate cymes; pedicels extremely short to sessile; floral bracts and bracteoles, linear, 3–4 mm long. *Hypanthium* narrowly ovate at anthesis, 4.5–7 mm long, 1–2.3 mm wide, 8-shaped in section, glandular. *Sepals* 5, all free to the base, 3 lobes 0.7–1.5 mm long, 2 lobes slightly shorter 0.4–1.2 mm long. *Corolla* lobes from the apex yellow, then orange, with red marks near the base, followed by pale green, abaxial surface lemon yellow, glandular, lobes laterally paired; anterior lobes obovate, *c.* 2.2 mm long, *c.* 1.6 mm wide; posterior lobes obovate-falcate, *c.* 5 mm long, *c.* 2 mm wide. *Throat* without appendages. *Labellum* boss pale green, ovate, *c.* 0.6 mm long, *c.* 0.4 mm wide, with a short apical reddish beard. *Gynostemium* 5.5–6.3 mm long; anthers pale green, vertically paired, abaxial surface with short translucent white moniliform hairs along the margins, pollen white; stigma elliptic, *c.* 0.9 mm long, *c.* 0.7 mm wide, cushion-shaped. *Capsule* ovate, 6–8.5 mm long, 2.5–3.5 mm wide, 8-shaped in section, slightly longitudinally twisted. *Seed* dark brown, \pm ovoid-ellipsoid, with 4 flat sides and slightly longitudinally twisted, 0.6–0.65 mm long, 0.3–0.4 mm diam., densely papillose. (Figure 4)

Other specimens examined. WESTERN AUSTRALIA: 12 miles [19.2 km] NW of Wickiepin on road to Pingelly, 8 Oct. 1974, *A.H. Burbidge* 1721A (PERTH); quarter mile [0.4 km] E of Harrismith, 8 Oct. 1974, *A.H. Burbidge* 1722 (PERTH); 9 km W of Tarin Rock siding, 9 Oct. 1974, *A.H. Burbidge* 1726 (PERTH); 10.2 km E of Ongerup, 24 Oct. 1974, *A.H. Burbidge* 1781 (PERTH); 40 km E of Hedges, which is S of Narembeen, 6 Oct. 1975, *A.H. Burbidge* 2149 (PERTH); about 1.5 km E of Kulin, on road to Lake Grace, 7 Oct. 1975, *A.H. Burbidge* 2156 (PERTH); 11 km from Jitarning, on EW road which is NW of Jitarning, 7 Oct. 1975, *A.H. Burbidge* 2160 (PERTH); 13 km S of Calingiri, 20 Oct. 1975, *A.H. Burbidge* 2177 (PERTH); 8.9 km N of Bolgart, near Wyening, 5 Oct. 1977, *A.H. Burbidge* 2519 (PERTH); Bolgart, Oct. 1949, *R. Erickson s.n.* (2 sheets) (PERTH); Corrigin–Quairading road, S of Quairading (Wanemusking East Rd corner) sports ground entry, 24 Oct. 1996, *B.A. Fuhrer* 96/95 (PERTH, MEL); 158.5 miles [253.6 km] S of Perth on Katanning–Wagin road, Oct. 1966, *S.H. James* 66.10/40 [voucher for chromosome count of $n = 13$] (PERTH); Tutanning Reserve, 28 Oct. 1966, *K.F. Kenneally* (PERTH); Wongan Hills, 15 Oct. 1988, *A. Lowrie s.n.* (PERTH); 10 km E of Nyabing, 4 Nov. 1990, *A. Lowrie s.n.* (PERTH); before Red Hill, top of escarpment on Toodyay Rd before Gidgegannup [in fruit], 11 May 1991, *A. Lowrie* 254 (PERTH); off Dewar's Pool–Bindoon Rd 19.5 km from Great Northern Highway, *c.* 3 km S on bush track, 26 Oct. 1991, *A. Lowrie* 438 (PERTH); on Toodyay road, top of the escarpment, Red Hill, 10 Nov. 1991, *A. Lowrie* 512 [voucher for chromosome count of $n = 13$] (PERTH); Dardadine South Rd, *c.* 4 km W of the junction with Albany Highway, 31 Oct. 1994, *A. Lowrie* 1073 (PERTH); SE corner of Pederah Nature Reserve *c.* 3 km from Jilikan Flatrocks Rd on Lake Grace–Kalgarin Highway, 9 Nov. 1995, *A. Lowrie* 1373 (PERTH); gravel pit on Jilikan Flatrocks Rd, *c.* 20 km from turn off to the Pederah Nature Reserve, 9 Nov. 1995, *A. Lowrie* 1378 (PERTH).

Distribution. Widely distributed in region bordered by the Darling Range east of Perth; south-east to Denmark *via* Pingelly and Wagin; north-east to the Stirling Range; north to Narembeen; and north-west to Wongan Hills. It also occurs on the coast in the Dunsborough area west of Busselton.

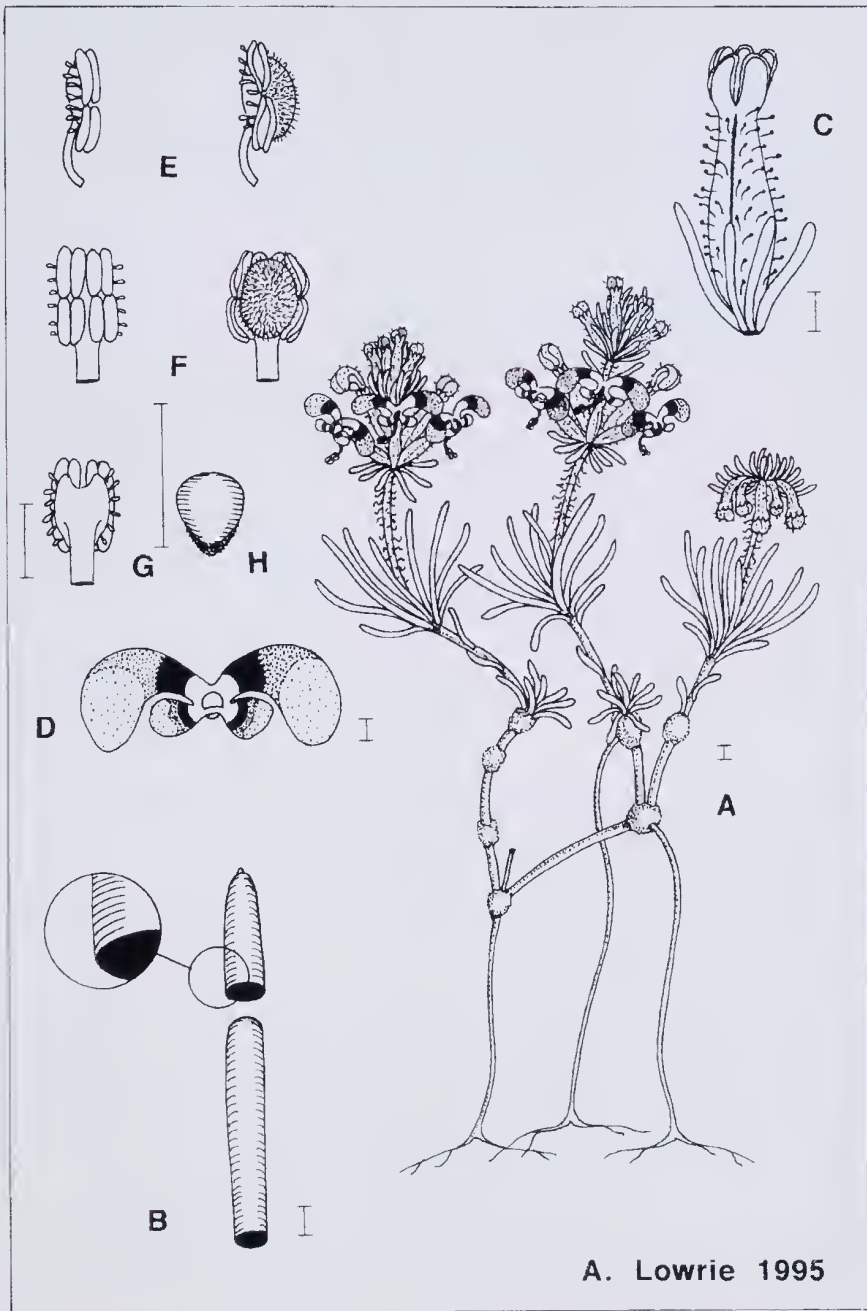


Figure 4. *Stylidium eriopodum* A – habit of flowering plant; B – leaf; C – hypanthium; D – corolla; E – lateral view of gynostemium tip (with stigma at right); F – face view of gynostemium tip (with stigma grown out, right); G – back of gynostemium; H – labellum. Scale bar = 1 mm. Drawn from cultivated material, origin Wongan Hills (PERTH).

Habitat. Grows in gritty loam soils over and along side of granite rock and in clayey sand over laterite usually in shrubland or Eucalypt woodlands.

Flowering period. October, November.

Chromosome number. $n = 13$, recorded as *Stylidium breviscapum* (Burbidge & James 1991).

Conservation status. Widely distributed and currently not considered to be at risk.

Etymology. The epithet *eriopodum* is from the Greek *erio* – wool and *podos* – foot in reference to the woolly peduncles.

Affinities. Its closest relatives are *Stylidium breviscapum* and *S. stowardii*. *S. breviscapum* differs in having a labellum bearing an apical point and basal appendages, all sepals of equal length, and a peduncle bearing pilose hairs tipped with minute glands. *S. stowardii* differs in having a round labellum with an entire margin, flowers clearly pedicellate, 3 sepals 0.5–1 mm (mostly 0.5 mm) longer than the other 2, and an inflorescence glandular throughout with both glands and pilose hairs on the peduncle.

Notes. The isotype of *Stylidium eriopodum* at K shares its sheet with two specimens of *S. breviscapum* labelled 'King George's Sound, S. W. Australia, Baxter.' Both specimens of *S. breviscapum* are ex Allan Cunningham's Australian Herbarium.

5. *Stylidium neglectum* Mildbr. (Mildbraed 1908: 89). *Type:* 'Avon: Wyola, an salzhaltigen lehmigen Stellen, gern im Schutze von Büschen 225 m ü M', Western Australia, October 1901, *Diels* 5034 (*holo:* W).

Stylidium dielsianum f. *ebulbosum* Mildbr. (Mildbraed 1908: 90). *Type:* 'Ohne Standortsangabe', Western Australia, *Drummond* 3rd coll. n. 171 (*holo:* W).

Illustrations. Erickson (1958) page 78, plate 19, figure 19 [as a dwarf form of *S. dielsianum*]; page 80, plate 20, figures 17–22 [as *S. bulbiferum* var. *septentrionale*]. Grieve & Blackall (1982) page 760, n. 89. Mildbraed (1908) page 85, figures G–J.

Creeping perennial *herb*; elevated up to 5 cm above the soil surface on wiry stilt roots, with 1–4 (sometimes more) stems up to 7 cm long arising from rosette nodes, with leaves scattered along their length and forming a leafy apical rosette. *Leaves* lanceolate, 6–10 (mostly 6–7) mm long, 0.6–1 mm wide near the base, 0.4–0.5 mm wide near the apex, semi-terete in the lower part, terete in section in the upper part, with entire margins hyalined translucent white, with a small apical blunt projection. *Inflorescence* to 2–3 cm long including peduncle, forming a narrow panicle, densely covered with long and short glandular hairs; pedicels 0.3–1 mm long; floral bracts, linear, 2.2–4.5 mm long; bracteoles linear, 0.8–1.5 mm long. *Hypanthium* lanceolate at anthesis, 3–5 mm long, 0.8–1.3 mm wide at the base, 0.4–0.5 mm wide at the apex, 8-shaped in section, densely covered with glandular hairs. *Sepals* 5, mostly all free to the base, but sometimes 3 free and 2 joined for half the length, 1–2.5 mm long. *Corolla* pink, abaxial surface very pale pink, glandular, lobes laterally paired; anterior lobes obovate, c. 2.5 mm long, c. 1.5 mm wide; posterior lobes obovate, slightly curved, c. 4 mm long, c. 2 mm wide. *Throat* and petal bases white, with purple marks between the white and the pink coloured zones, without appendages. *Labellum* boss round, c. 0.6 mm diam.; basal appendages

c. 0.3 mm long. *Gynostemium* 4–6.5 mm long, anthers green, vertically paired, abaxial surface with a few short translucent white moniliform hairs towards the apex, pollen greenish yellow; stigma elliptic, *c.* 1 mm long, cushion-shaped. *Capsule* narrowly ovate-elliptic, 8-shaped in section, 4–6 mm long, 1.2–1.6 mm wide near the base, 0.4–0.8 mm wide near the apex. *Seed* (not quite fully mature) light brown, ellipsoid, 0.4–0.5 mm long, 0.25–0.3 mm diam., papillose. (Figure 5)

Other specimens examined. WESTERN AUSTRALIA: no locality, no date, *E. Bailey s.n.* [voucher for illustration (Grieve and Blackall 1982: 760)](PERTH); 27.7 km N of Lake Grace, 24 Oct. 1974, *A.H. Burbidge* 1779 (PERTH); 16.6 km E of Wave Rock turnoff, E of Hyden, 17 July 1975 [not in flower], *A.H. Burbidge* 1980 (PERTH); Mt Hampton, 1 Sep. 1975 (not in flower), *A.H. Burbidge* 2033 (PERTH); 12.8 km E of the railway line at Hedges, 6 Oct. 1975 (not in flower), *A.H. Burbidge* 2140 (PERTH); near Bendinging, 18 Oct. 1961, *C.A. Gardner* 13618 (PERTH); 3 miles E of Muntagin Rock, Aug. 1965, *S.H. James* 65.8/26 [voucher for chromosome count of $2n = 26$] (PERTH); 1 mile [1.6 km] NE of Merredin, 6 Nov. 1973, *G.J. Keighery* 2819 (PERTH); W of the Wongan Hills Agriculture Dept., 27 Oct. 1990, *A. Lowrie* 138 (PERTH); on Goldfields Rd, 0.7 km E of Chandler–Merredin Rd, opposite golf course, N side of road, 23 Nov. 1993, *A. Lowrie* 826 (PERTH); on Kondinin–Hyden road, 3.6 km W of Hyden, 24 Nov. 1993, *A. Lowrie* 828, 829 & 830 (PERTH); on Hyden–Ravensthorpe road, 1.6 km E of Hyden, 24 Nov. 1993, *A. Lowrie* 831 (PERTH); on Hyden–Ravensthorpe road, 12.1 km E of Hyden, 24 Nov. 1993, *A. Lowrie* 832 (PERTH); on Hyden–Ravensthorpe road, 14.5 km E of Hyden, 24 Nov. 1993, *A. Lowrie* 833 (PERTH); on Hyden–Ravensthorpe road, 23.9 km E of Hyden, 24 Nov. 1993, *A. Lowrie* 834 (PERTH); 9.8 km S of the junction of Hyden–Norseman road (technically still on Hyden–Ravensthorpe road) near Lake Carnody, 25 Nov. 1993, *A. Lowrie* 835 (PERTH); E side of rock, road access to area on Holt Rock–North Rd *c.* 100 m NE of Hyden–Ravensthorpe road, Holt Rock, 25 Nov. 1993, *A. Lowrie* 836 (PERTH); on Duck Rock West Rd, 2.1 km W of the turnoff to East Hyden, 25 Nov. 1993, *A. Lowrie* 839 (PERTH); Wave Rock, near Hyden, 7 July 1974 (not in flower), *B. Powell* 1597 (PERTH); Sandalwood Rock, 14 Nov 1989, *B.H. Smith* 1260 (MEL); *c.* 0.25 mile [0.4 km] W of research Station Homestead, Avon Bot. District, 30° 50' S, 116° 42' E, 12 Oct. 1990, *B.H. Smith* 1372 (MEL).

Distribution. Occurs at widely scattered locations in the region bordered by Merredin; south to Lake Grace; south-east to Ravensthorpe; north-west to Holt Rock; north to Mt Hampton and nearby Sandalwood Rocks; and north-west towards Merredin. A larger variant occurs in the Wongan Hills area.

Habitat. Grows in brown loam over granite rock and in clayey soils in winter wet depressions.

Flowering period. November, December. Specimens in cultivation continue to flower well into December. It appears *Stylidium neglectum* is an opportunist species capable of extending its flowering period in good seasons.

Chromosome number. $2n = 26$ (James 1979).

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Three. *Stylidium neglectum* was listed 1991 as Presumed Extinct. Field studies by one of us (A.L.), discovered localized but healthy populations of *S. neglectum* near Merredin and at a number of locations in the Hyden region. Most of these were roadside locations or water catchment reserves and not one of these was in a Nature Reserve. The type location unfortunately is weed-infested to the point where most native herbs have disappeared.

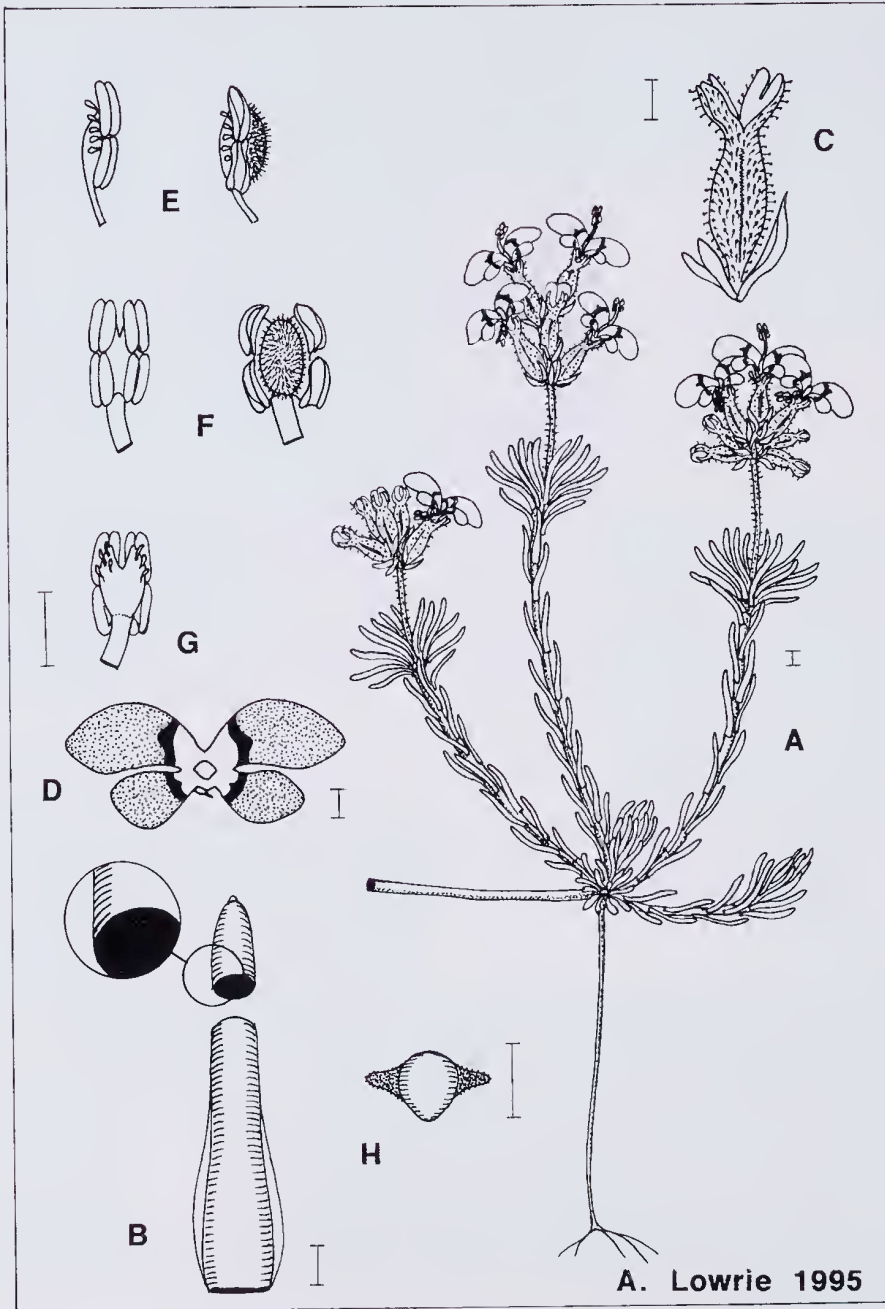


Figure 5. *Styliidium neglectum* A – habit of flowering plant; B – leaf; C – hypanthium; D – corolla; E – lateral view of gynostemium tip (with stigma at right); F – face view of gynostemium tip (with stigma grown out, right); G – back of gynostemium; H – labellum. Scale bar = 1 mm. Drawn from A. Lowrie 138 (PERTH).

Etymology. The epithet *neglectum* is from the Latin *neglectus* – overlooked, in reference to this species being hitherto unidentified.

Affinities. *Stylidium neglectum* is distinguished from other taxa in the *S. breviscapum* complex by its narrow paniculate inflorescence, which is densely covered with long and short glandular hairs (including the peduncle), and its round labellum boss with basal appendages only.

Notes. The type sheet for *Stylidium dielsianum* f. *ebulbosum*, which was determined and photographed (by K.F.K.) in W, is applicable to *S. neglectum*. The sheet was annotated by Mildbraed with the unpublished name, *Stylidium neglectum* Mildbr. var. *majus*. Mildbraed was then closer to the issue regarding the specimen as a variant of *S. neglectum* than in the name he finally published under *Stylidium dielsianum*. Mildbraed (1908: 50) also listed the type collection (Drummond ser. III, n. 171) erroneously under *Stylidium repens*.

A larger variant of *Stylidium neglectum* is found in the Wongan Hills region, 80 km north-east of James Drummond's farm and residence at Toodyay. Drummond's 3rd collection included collections from north-east of Bolgart (Erickson 1969) which is 30 km north of Toodyay and a distance of 50 km south-west of Wongan Hills, and this may have been where *Drummond* ser. III, n. 171 was collected.

Live potted specimens of the larger variant of *Stylidium neglectum* collected at the Wongan Hills site (A. Lowrie 138) in 1993 proved to be comparable with live potted specimens of the typical variant of *S. neglectum* collected from the Holt Rock site (A. Lowrie 836) in the same year.

6. *Stylidium stowardii* M. Scott (Scott 1915: 91). *Type:* Nangeenan, Western Australia, *Stoward* 121 (*lecto:* K, here designated); between Perth and Coolgardie, railway between Cunderdin and Dedari, Western Australia, *Thistleton-Dyer* 87 (*syn:* K).

Illustrations. Erickson (1958) page 82, plate 21, figures 10–11. Grieve & Blackall (1982) page 758, n. 86 [inland form only].

Creeping perennial *herb*; elevated up to 3 cm above the soil surface by wiry stilt roots, rosette nodes connected by branching leafless stems 0.8–15 mm long, forming compact clumps mostly up to 10 cm diam., rarely to 20 cm diam. *Stems* up to 3 cm long, 2–4, but sometimes more arising from the rosette nodes, bearing scattered leaves along their length with the upper leaves in a terminal tuft. *Leaves* of the terminal tuft linear, 5.5–7.5 mm long, 0.5–0.9 mm wide, semi-terete in the upper part, lenticulate in section in the lower part, with a small apical blunt projection; leaves along the stem flatter, with irregularly serrate translucent white hyaline margins and a sharp apical mucro. *Inflorescence* corymbose, 1–1.5 cm high including peduncle, glandular throughout, peduncle also bearing pilose hairs; pedicels 1.5–4.5 mm long; floral bracts linear, 2.5–3 mm long; bracteoles 1.5–2 mm long. *Hypanthium* at anthesis, narrowly elliptic, narrowly ovate or oblong, 3.5–6 mm long, 1–1.7 mm wide, 8-shaped in section, slightly longitudinally twisted, glandular. *Sepals* 5, all free to the base, 3 lobes 1.5–2.2 mm long, 2 lobes substantially shorter, 0.5–1.5 mm long. *Corolla* adaxial surface snow white with pink marks at the base of each lobe, abaxial surface white, yellow and glandular along the mid-vein zones, lobes laterally paired; anterior lobes obovate-elliptic, *c.* 2.5 mm long, *c.* 1.5 mm wide; posterior lobes oblanceolate-falcate, *c.* 5 mm long, *c.* 2.5 mm wide. *Throat* without appendages. *Labellum* boss round, *c.* 0.5 mm diam. *Gynostemium* 5.5–6.5 mm long; anthers yellowish green, vertically paired, abaxial surface glabrous, pollen white; stigma elliptic, *c.* 1 mm long, *c.* 0.8 mm wide, cushion-shaped. *Capsule* unknown. *Seed* unknown. (Figure 6)

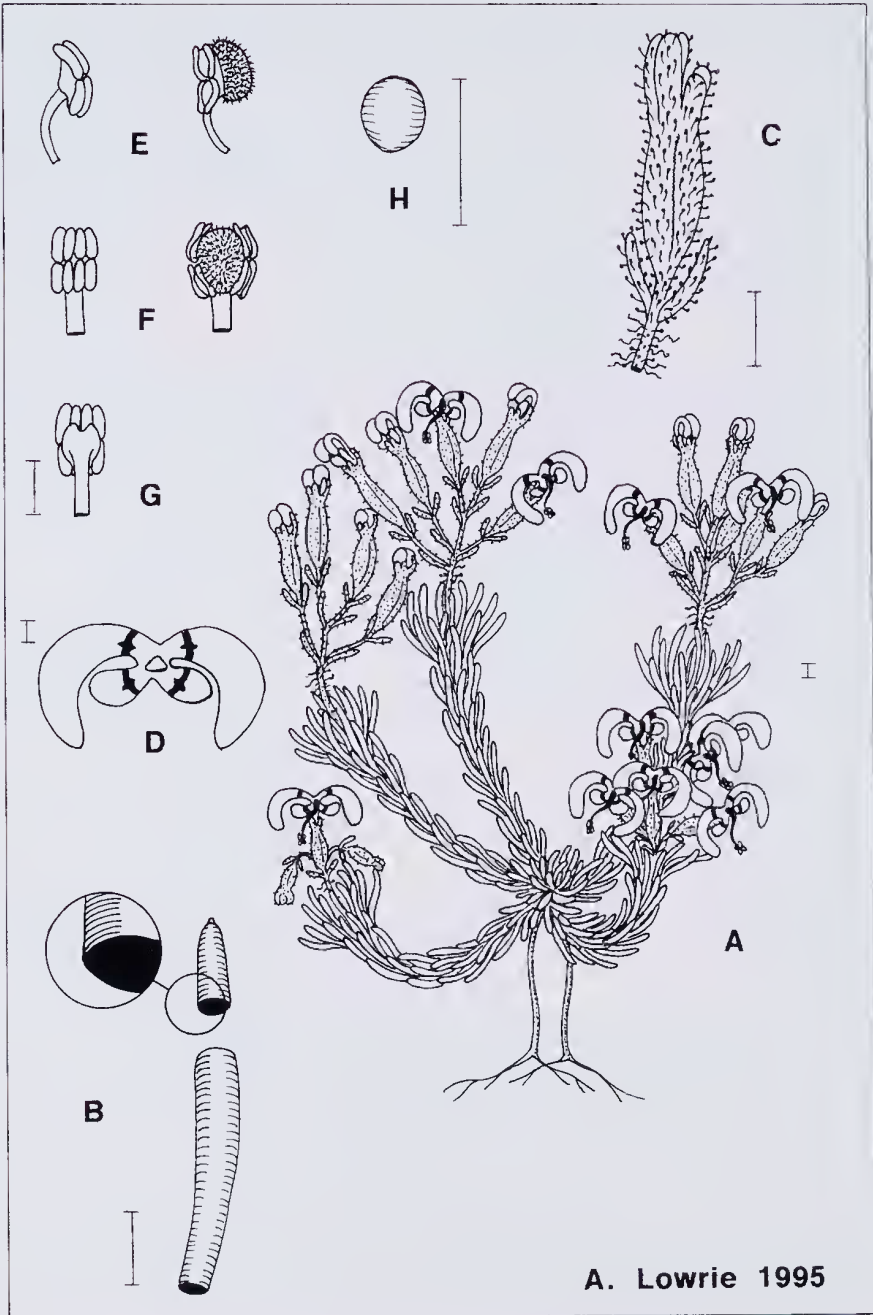


Figure 6. *Styliidium stowardii* A - habit of flowering plant; B - leaf; C - hypanthium; D - corolla; E - lateral view of gynostemium tip (with stigma at right); F - face view of gynostemium tip (with stigma grown out, right); G - back of gynostemium; H - labellum. Scale bar = 1 mm. Drawn from cultivated material, origin south end of North Rd, Mount Madden area (PERTH).

Other specimens examined. WESTERN AUSTRALIA: 27.7 km N of Lake Grace, 24 Oct. 1974, A.H. Burbidge 1775 (PERTH); Merredin–Narembeen road, 17 km S of Great Eastern Highway, 6 Oct. 1975, A.H. Burbidge 2135 (PERTH); 26 km E of Lake King township, 25 Oct. 1975, A.H. Burbidge 2200 (PERTH); 28 km N of Lake Grace (near turnoff to Mordetta), 24 Oct. 1975, A.H. Burbidge 2189 (PERTH); 10.5 km E of Lake King, 25 Oct. 1975, A.H. Burbidge 2198 (2 sheets) (PERTH); SE of Newdegate on road to Pallinup Rocks, 28 Aug. 1975, D.J. Coates s.n. (PERTH); 27 miles [43.2 km] W of Ravensthorpe and \pm 18 miles [28.8 km] N of Ongerup road, 30 Oct. 1965, A.S. George 7066 (PERTH); 14 miles [22.4 km] S of Merredin on road to Muntagin, Aug. 1965, S.H. James 65.8/24 [voucher for chromosome count of $2n = 26$] (PERTH); 15 miles [24 km] N of Ravensthorpe on road to Lake King, Oct. 1972, S.H. James 72.10/20 [voucher for chromosome count of $n = 13$] (PERTH); c. 36 km E of Hyden on the road to the cross road of Mt Holland–Forrestania road, 24 Sep. 1989, A. Lowrie s.n. (PERTH); 5 km N of Merredin on Merredin–Nungarin Rd, 1 Oct. 1989, A. Lowrie s.n. (PERTH); on road to Bruce Rock, 33.4 km S of Doodlakine, 16 Oct. 1990, A. Lowrie 113 (PERTH); c. 50 km E of Hyden on the road to the cross road of Mt Holland–Forrestania road, 17 Oct. 1990, A. Lowrie 117 (PERTH); c. 20 km W of Ongerup, 11 Nov. 1974, D.J.E. Whibley 5275 (PERTH).

Distribution. Widely distributed in region bordered by Doodlakine; south to Bruce Rock; south-east to Lake Grace; south to Ongerup; east to Ravensthorpe; north-west to Lake King; north-east to Forrestania; north to Mt Holland; and north-west to Merredin.

Habitat. Grows in yellowish sands and red soils.

Flowering period. September, October.

Chromosome number. $n = 13$, $2n = 26$, both as *S. breviscapum* (Burbidge & James 1991).

Conservation status. A common species and currently not under threat.

Etymology. The epithet *stowardii* honours Frederick Stoward (1866–1931), botanist with the Department of Agriculture, Western Australia 1911–1917.

Affinities. Its nearest relatives are *Stylidium breviscapum* and *S. eriopodum*. *S. breviscapum* differs in having a labellum bearing an apical point and basal appendages, all sepals of equal length, and a peduncle bearing pilose hairs tipped with minute glands. *S. eriopodum* differs by having a labellum bearing a short apical beard, flowers almost sessile, three sepals 0.2–0.3 (mostly 0.3) mm longer than the other two, and a peduncle bearing only pilose hairs.

Notes. The *Stylidium stowardii* designated lectotype sheet housed at K has been selected because it best represents the original description, a copy of which is attached to the top left corner of the sheet.

7. *Stylidium bulbiferum* Benth. (Bentham 1837: 73). – *Candollea bulbifera* (Benth.) F. Muell. (Mueller 1883: 86). – *Stylidium bulbiferum* Benth. var. *bulbiferum* (Benth.) Sond. (Sonder 1845: 388). – *Stylidium bulbiferum* Benth. f. *bulbiferum* (Benth.) Mildbr. (Mildbraed 1908: 92). *Type:* Swan River, [Western Australia], Hügel (*lecto:* BM, here designated); Freemantle [Fremantle], [Western Australia], Hügel (*syn:* W).

Stylidium bulbiferum f. *macrorrhizum* Mildbr. (Mildbraed 1908: 92). *Type:* Bellevue, Western Australia, E. Pritzel 838 (*lecto:* PERTH 02956535, here designated; *isolecto:* K, S, BM, B, NSW, E,

W); Distr. Darling: Swan, auf sumpfigen Alluvialflächen mit lehmigem Boden Western Australia, (syn: B, n.v.); Midland Junction, Western Australia, October 1901, *Diels* 5112 (syn: B, n.v.).

Illustrations. Erickson (1958) page 80, plate 20, figures 11–16. Grieve & Blackall (1982) page 761, figure 90; photograph, colour plate XI, top right.

Stylidium proliferum DC. (de Candolle 1839: 783). *Type:* 'in Novâ-Hollandiâ ad Swan-river legit cl. Drummond. ... (v. s. à cl. inv.)' [Western Australia, J. Drummond] (*holo:* G–DC).

Stylidium recurvum Graham (Graham 1842: t. 3913). *Type:* 'I first saw this species in the nursery of Mr. CUNNINGHAM, Comely Bank, near Edinburgh, where it flowered in a frame in May, 1840. In the month following, we received it at the Botanic Garden, Edinburgh, from Mr. HENDERSON'S nursery in the Edgeware-road, and at the same time from Mr. JACKSON, Nurseryman, Kingston, Surrey. It is indigenous to the neighbourhood of Swan River, [Western] Australia.' (*lecto:* Illustration t. 3913 in Graham 1842, here designated).

The following description only applies to the typical variant. A creeping perennial *herb*; with lignotuber-like rosette nodes situated mostly at the soil surface, leafy stems many, arising from rosette nodes, together forming an erect compact bush-like clump up to 18 cm in diam., nearby asexually reproduced leafy clumps sometimes still attached by a leafless horizontal stem c. 5 cm long, nearby leafy clumps mostly free of the parent plant, many bush-like clumps often meshed together to form compact colonies up to 45 cm diam. *Stems* lacking between the rosette nodes forming lignotuber-like bases, stems between the rosette node clusters when present leafless, flowering stems up to 12 cm long arising singly or in groups of 2–3 from each rosette node within the basal cluster, bearing leaves along their length and terminating in a crowded spreading apical leafy rosette. *Leaves* of the apical rosette linear, 8–15 mm long, 0.5–0.8 mm wide, apex with a sharp translucent white mucro, 0.4–0.5 mm long, margins bearing white translucent white serrulate hyaline margins in the lower portion, serrate-laciniate in the upper parts, elliptic in section, c. 0.5 mm thick; leaves along the erect stems similar but c. half the length of apical rosette leaves. *Inflorescence* 2–4 cm long including peduncle, 1–5-flowered, but mostly 3-flowered, glandular-pilose; pedicels 5–9 mm long; floral bracts linear, 3–3.5 mm long; bracteoles linear, 1.8–2 mm long. *Hypanthium* oblong-linear at anthesis, 7–10 mm long, 0.4–1 mm wide, glandular. *Sepals* 5, all free to the base, oblanceolate, 2–2.5 mm long, glandular. *Corolla* pink to dark pink with reddish marks near the petal bases, abaxial surface white or pale pink, glandular, lobes laterally paired; anterior lobes obovate, c. 4 mm long, c. 2.5 mm wide; posterior lobes oblanceolate-slightly falcate, c. 6 mm long, c. 2 mm wide. *Throat* yellow, without appendages. *Labellum* boss pale green, broadly ovate, c. 0.6 mm long, c. 0.6 mm wide; with a small reddish apical beard; basal appendages pale green, subulate, c. 0.3 mm long, papillose. *Gynostemium* 6.5–7 mm long, anthers yellow, laterally paired, abaxial surface with translucent white moniliform hairs along the margins, pollen white; stigma elliptic, c. 1 mm long, c. 0.8 mm wide, cushion-shaped. *Capsule* unknown. *Seed* unknown. (Figure 7)

Other specimens examined (of typical variant). WESTERN AUSTRALIA: 4.4 km W of main road (Old Coast Road), on road S of Tim's Thicket, which is S of Dawesville, 26 Oct. 1977, A.H. Burbidge 2526 [voucher for chromosome count of $n=14$] (PERTH); Cottesloe Beach, 1902, A.G. Hamilton s.n. (NSW); 4.5 km W of Old Coast Rd, 6 km S of Dawesville, Yalgorup National Park, 13 Oct. 1993, B.J. Keighery & N. Gibson 356 (PERTH); Redemptora Rd, Navel Base [Henderson industrial area], 25 Oct. 1987, G.J. Keighery 9226 (PERTH); c. 1 km E from the ocean behind beach sand dunes on Tim's Thicket Rd, Dawesville, S of Mandurah, 27 Oct. 1991, A. Lowrie 445 (PERTH); Yeal Swamp Rd, limestone quarry c. 3 km E of Wanneroo–Lancelin Rd, 22 Oct. 1995, A. Lowrie 1356 (PERTH); on hill at the

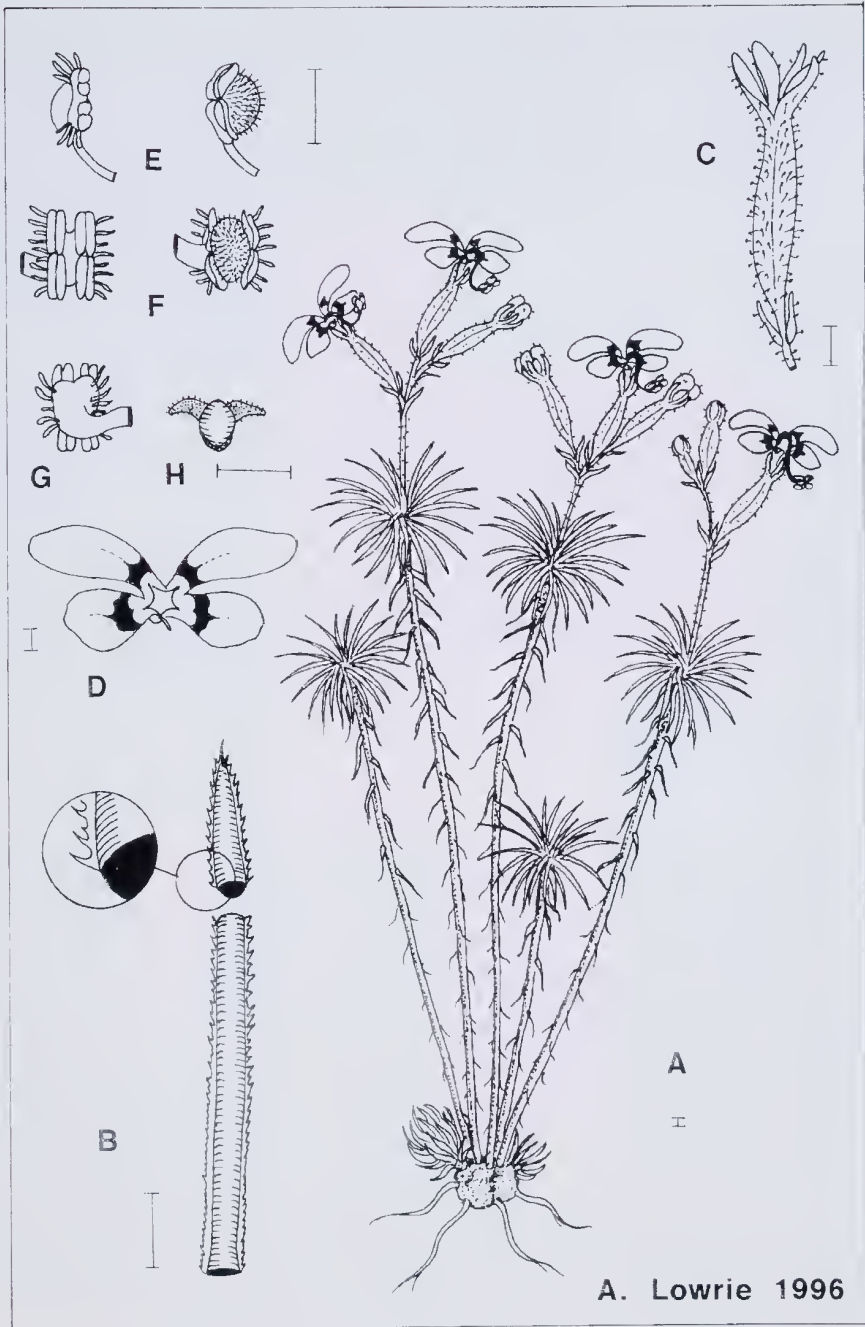


Figure 7. *Styliidium bulbiferum* A – habit of flowering plant; B – leaf; C – hypanthium; D – corolla; E – lateral view of gynostemium tip (with stigma at right); F – face view of gynostemium tip (with stigma grown out, right); G – back of gynostemium; H – labellum. Scale bar = 1 mm. Drawn from A. Lowrie 1356 (PERTH).

junction of Redemptora & Egmont Rds, Henderson industrial area [specimens in vegetative growth only], 19 Sep. 1998, *A. Lowrie* 2104 (PERTH).

Other specimens examined (of atypical Darling Range variant). WESTERN AUSTRALIA: clay-gravel in Darling Range Guildford, Armadale, Kelmscott near Perth, Sept–Nov. 1901 & 1902 grows in dense masses, fl. pink. HERB. CECIL ANDREWS [specimens on same sheet with type for *Stylidium bulbiferum* bottom right] (BM); Roleystone on Brookton Highway, c. 2 km from Albany Highway, 25 Oct. 1974, *A.H. Burbidge* 1802 (PERTH); Ford Road, Lesmurdie, 8 Oct. 1975, *A.H. Burbidge* 2169 (PERTH); Toodyay–Chittering Road, 6 Nov 1975, *A. H. Burbidge* 2263 (PERTH); Crystal Brook Road, part way up scarp, 31 Oct. 1976, *A.H. Burbidge* 2403A (PERTH); W slopes of Mt Cooke, 16 Nov 1977, *A.H. Burbidge* 2541 (2 sheets) (PERTH); 8–9 km NE of Pearce on road to Lower Chittering, 14 Oct. 1976, *D. J. Coates s.n.* (PERTH); Maida Vale, 29 Sep. 1930, *G. R. Dickins s.n.* (PERTH); Darling Scarp near zig-zag carpark at top, 3 Oct. 1996, *M.G. Corrick* 11257 with *B.A. Fuhrer* (PERTH, MEL); Darlington, mid-Nov 1951, *J. Gentili s.n.* (PERTH); 6.6 km N of Muchea on Great Northern Highway, 7 Oct. 1975, *S. D. Hopper s.n.* (PERTH); Granite ridge above end of Owen Road, Darlington, Oct. 1965, *S. James* 65.10/26 [voucher for chromosome count of $n = 14$] (PERTH); Darling Scarp above Bullsbrook, Oct. 1971, *S.H. James* 71.10/19 [voucher for chromosome count of $n = 14$] (PERTH); Darlington, Oct. 1973, *S.H. James* 73.10/14 (PERTH); Roleystone, mid-Oct., *E. Jenkins & W. Ives s.n.* (PERTH); Old Crystal Brook Road, 3 Oct. 1966, *K. F. Kennally s.n.* (2 sheets) (PERTH); on Mills Rd, Kelmscott, 3 km E of Tonkin Highway, 8 Oct. 1990, *A. Lowrie* 159 (PERTH); on Albany Highway 5.6 km N of Glen Eagle picnic grounds, 10 Nov. 1990, *A. Lowrie* 187 (PERTH); on Great Northern Highway in swamp on the corner of Wandena Rd (south end) Muchea, 2 Oct. 1991, *A. Lowrie* 358 (PERTH); on Great Northern Highway c. 2 km N of the junction of Wandena Rd (S end), Muchea, 2 Oct. 1991, *A. Lowrie* 359 (PERTH); on Clenton Rd S of Ewing Rd, Gidgegannup, 10 Nov. 1991, *A. Lowrie* 508 (PERTH); Maida Vale, 10 Oct. 1926, *A.G. Nicholls s.n.* (PERTH); Bickley, 9 Oct. 1951, *A. Notley s.n.* (PERTH); Darlington, 12 Oct. 1949, *B. Roack s.n.* (PERTH); Albany Highway, 48 km S of Perth, 12 June 1982 (not in flower), *G. J. Weber s.n.* (PERTH); Darlington, 31 Oct. 1931, *R.F. Williams s.n.* (2 sheets) (PERTH).

Other specimens examined (of atypical *Stylidium* sp. C variant). WESTERN AUSTRALIA: S side of Hotham River bridge on Pingelly–Narrogin road, 3 July. 1977, *A.H. Burbidge* 2481 [voucher for chromosome count of $2n = 28$] (PERTH); Near Canning Weir, 16 Nov 1977, *A.H. Burbidge* 2539 (2 sheets) (PERTH); Boulder Rock, Brookton Highway, 16 Nov 1977, *A.H. Burbidge* 2536 (2 sheets) (PERTH); Sullivan Rock, Albany Highway, 16 Nov 1977, *A.H. Burbidge* 2543 (3 sheets) (PERTH); 48 km NW of Dale on Brookton Highway, 17 Nov. 1985, *A.H. Burbidge* 3964 (PERTH); North East Rd 32° 29' 21" S 116° 18' 20" E, c. 80 km SE of Perth, 19 Nov. 1996, *A. Lowrie* 1620 (PERTH); Boulder Rock on Brookton Highway, 16 Nov. 1977, *R. Tinetti s.n.* (PERTH).

Distribution. Specimens comparable to the type are known only from the coastal region from Yanchep south to Dawesville. Other variants occur in the Darling Range east and south east of Perth.

Habitat. The typical variant grows near the coast in the grey sandy soils caught in the crater-like depressions of sharp jagged limestone cap rock outcrops as well as on the aprons and ledges covered with similar skeletal soils and limestone scree alluvium. Atypical variants occur in a wide variety of soil types mainly associated with sheet laterite and/or granite rock. Typical habitats include loam or laterite watersheds; sandy loam along the margins of winter wet water courses; and gritty loam on the aprons of granite outcrops.

Flowering period. October (atypical variants October to November).

Chromosome number. $n = 14$, typical variant recorded as *Stylidium* species A (Dawesville); $n = 14$, atypical Darling Range variant; and $2n = 28$, atypical *Stylidium* sp. C variant (Burbidge & James 1991).

Conservation status. The type variant is currently common at the Yanchep and Dawesville locations but both of these locations are threatened as they lie in the path of rapidly expanding coastal urban development. Populations have been recorded on White Hill within the Yalgorup National Park but the status of these populations is currently unknown. A population exists on an undeveloped [at 19 September 1998] industrial block in Henderson c. 12 km south of Fremantle. This is currently the closest surviving population known to the type locality. Populations from the intermediate area, for example near Fremantle, may now be extinct. The *Stylidium* species C variant (see below) is currently designated as CALM Priority Two. Further study is needed.

Etymology. The epithet *bulbiferum* is from the Latin *bulbus* – bulb and *fero* – I bear, in reference to the lignotuber-like rosette nodes of the species.

Affinities. The nearest relatives to *Stylidium bulbiferum* are *S. cilium*, *S. megacarpum* and *S. septentrionale*. *S. bulbiferum* can be distinguished from all of these taxa except *S. megacarpum* by its lignotuber-like rosette nodes situated mostly at the soil surface. *S. megacarpum* differs from *S. bulbiferum* by having a lax lateral leafy stem growth habit, mostly unflowered inflorescences and a longer hypanthium.

The strong similarity between the two *Stylidium bulbiferum* type collections, ‘Swan River, Hügel’ at BM and ‘Freemantle, Hügel’ at W suggests they are most likely to be from the same gathering. The type for *S. proliferum* collected by Drummond is comparable to the A.H. Burbidge 2526 and A. Lowrie 445 collections (PERTH).

Notes. The *Stylidium bulbiferum* f. *macrorrhizum* designated lectotype sheet housed at PERTH has been selected as it represents the original description. The syntypes of this taxon from B are presumed to have been destroyed in World War II.

Stylidium recurvum was named from cultivated material. No type specimen has been found. However, a solitary specimen without collection or collector details, stamped Herbarium Hookerianum 1867 and contained within a pencilled border on a shared sheet with an isoelectotype of *Stylidium cilium* ‘Swan River, Drummond 541’ at K is somewhat similar to the *S. recurvum* illustration Graham (1842: t. 3913). This may have been the specimen used as the study for the illustration. Capsule measurements are not available from Graham’s illustration but the specimen at K has capsules 8–11 mm long. Among our specimens, the ones showing greatest similarity to this illustration are from south of Byford (e.g. A. Lowrie 449) and are of the Darling Range variant (see below) of *Stylidium bulbiferum*.

Typical *Stylidium bulbiferum* is restricted to coastal limestone areas from Yanchep to south of Mandurah. It is characterized by having its lignotuber-like rosette nodes situated mostly at the soil surface.

Other variants commonly occur throughout the Darling Range east of Perth. These variants are characterized by having rosette nodes on stilt-roots mostly situated above the soil surface. They are characterized by having leaves bearing fine serrate-edged translucent white hyaline margins which are often entire and without hyaline in the upper parts.

Another variant of *Stylidium bulbiferum* is known from along the Albany Highway south-east of Armadale near Boulder Rock (*Stylidium* sp. C of Burbidge & James 1991). It is characterized by terminal rosette leaves having a fine translucent white entire hyaline with some leaves bearing a few short spines near the apex and at anthesis producing leaves with serrate-ciliate hyaline margins; labellum with basal appendages, *c.* 0.8 mm long, *c.* 0.4 mm wide; anterior and posterior corolla lobes not falcate and < 0.5 mm difference in length; and a late flowering time. The name *Stylidium bulbiferum* f. *macrorrhizum* applies to one of these variants.

The precise status of these atypical variants requires further study, including chromosome and allozyme research and detailed karyotype analysis. For now we are retaining these Darling Range variants under *Stylidium bulbiferum*, but they may prove to be distinct species.

8. *Stylidium burbridgeanum* Lowrie & Kenneally (Lowrie & Kenneally 1997: 185–187). *Type:* On Watheroo Rd, 2 km east of Brand Highway, Western Australia, 30° 21' S, 115° 30' E, 27 October 1989, A. Lowrie 296 (*holo:* PERTH 04431308; *iso:* MEL).

Creeping perennial *herb*; elevated up to 5 cm above the soil surface on wiry stilt roots, with 2–4, but sometimes more leafy stems up to 6 cm long arising from the rosette nodes, bearing scattered leaves along their length and terminating in an apical leafy rosette. *Leaves* linear, 5–15 (mostly 10–12) mm long, 1–1.2 mm wide, terete in the upper part, semi-terete in the lower part with margins hyalined translucent white and minutely serrate, with a small apical blunt projection, later leaves at anthesis bearing a sharp mucro. *Inflorescence* 4–6 cm long including peduncle, forming a narrow panicle, densely covered with long and short glandular hairs; pedicels < 0.5 mm long; floral bracts, linear, 3–4 mm long; bracteoles 2–2.5 mm long. *Hypanthium* lanceolate at anthesis, 8-shaped in section, 5.5–6 mm long, 1.5–1.8 mm wide at the base, 0.5–1 mm wide at the apex, densely covered with glandular hairs. *Sepals* 5, all free to the base, 2–2.5 mm long. *Corolla* pink, abaxial surface very pale pink, sparsely glandular, lobes laterally paired; anterior lobes obovate, *c.* 2.5 mm long, *c.* 1.5 mm wide; posterior lobes obovate-falcate, *c.* 5.5 mm long, *c.* 2.7 mm wide. *Throat* and petal bases white, with purple marks between the white and the pink coloured zones, without appendages. *Labellum* boss round, *c.* 0.8 mm long, *c.* 0.7 mm wide without basal appendages, margins near the base provided with a few glandular hairs, attached to the base of the corolla tube sinus. *Gynostemium* 5–7 mm long, anthers green, vertically paired, abaxial surface with a few short marginal translucent white moniliform hairs, pollen grey; stigma elliptic, *c.* 1.1 mm long, *c.* 0.6 mm wide, double-cushion-shaped. *Capsule* *c.* 7 mm long. *Seed* unknown. (Figure 8)

Other specimens examined. WESTERN AUSTRALIA: Eneabba–Mingenew Rd, NE of Eneabba, 2 Dec. 1992, E.A. Griffin 8067 (PERTH); 3 km W of Brand Highway on Greenhead Rd (Breakaway Property) 13 Dec. 1996, M. Hislop 643 (PERTH); 12.3 km W of Three Springs on road to Eneabba, 5 Sep. 1975, S.H. James 75.9/5 [voucher for chromosome count of $n = 14$] (PERTH); S end of Banovich Road, creek crossing *c.* 2.5 km N of the Jurien Bay road, 27 Nov. 1988, A. Lowrie *s.n.* (PERTH); along Brand Highway, 13.5 km N of Regan's Ford, 6 Oct. 1982, K.H. Rechinger 58204 (PERTH).

Distribution. Known from three regions: Badgingarra–Mount Lesueur–north-east to the Green Head road; north-east of Eneabba; and Kalbarri National Park.

Habitat. Grows on winter wet creek margins and adjacent watersheds in loamy soil. In white silica sand in winter wet depressions.

Flowering period. October to December.

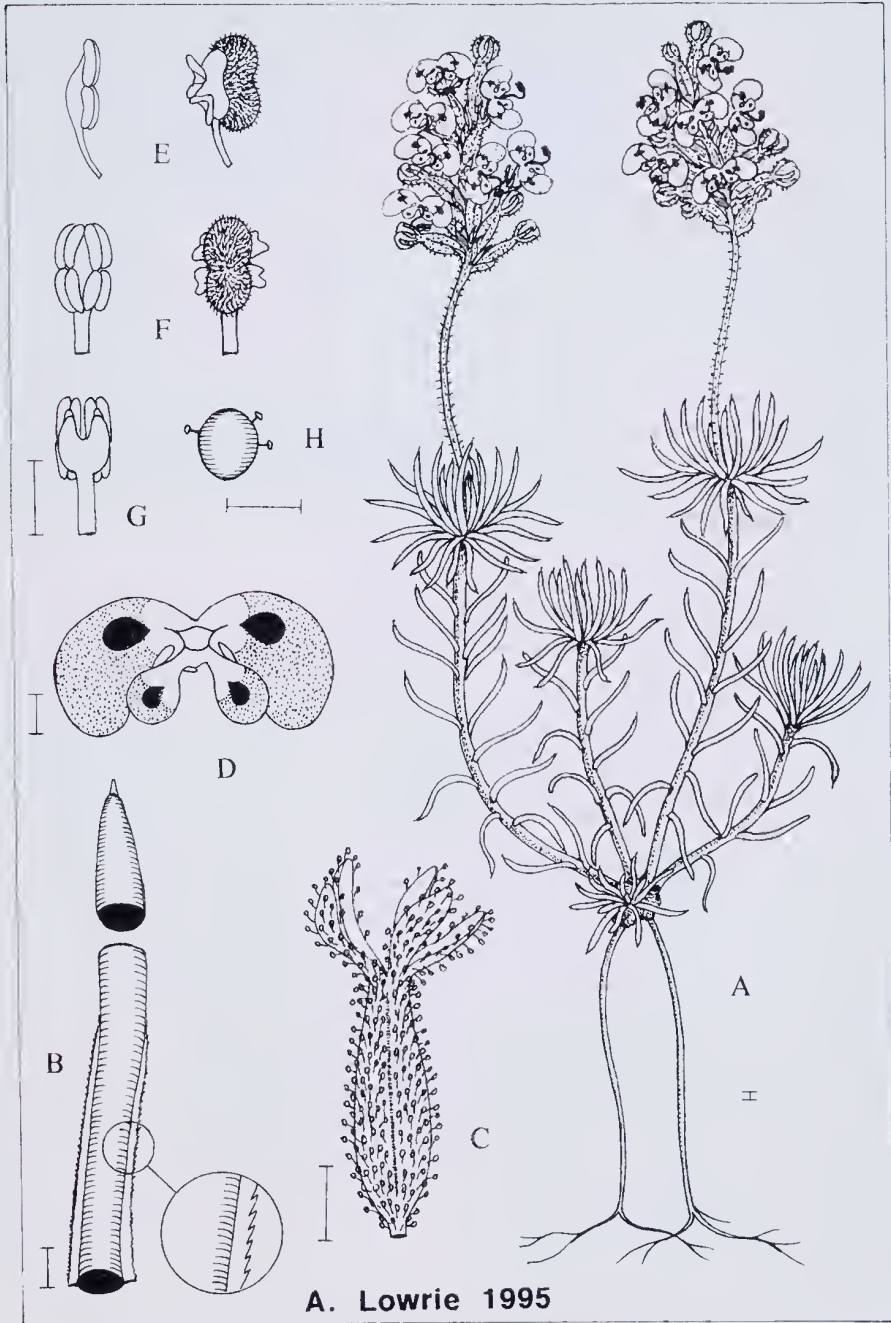


Figure 8. *Styliidium burbidgeanum* A – habit of flowering plant; B – leaf; C – hypanthium; D – corolla; E – lateral view of gynostemium tip (with stigma at right); F – face view of gynostemium tip (with stigma grown out, right); G – back of gynostemium; H – labellum. Scale bar = 1 mm. Drawn from A. Lowrie 296 (PERTH).

Chromosome number. $n = 14$ (Burbidge & James 1991).

Conservation status. This species occurs in three widely separated regions, all of which are currently not under threat.

Etymology. The epithet *burbidgeanum* is named in honor of Dr Allan H. Burbidge, co-author of this paper, who first discovered this species.

Affinities. *Stylidium burbidgeanum* is distinguished from other taxa in the *S. bulbiferum* complex by its narrow paniculate inflorescence, which is densely covered with long and short glandular hairs (including the peduncle), the obovate-falcate shape of the posterior corolla lobes, and its labellum without basal appendages.

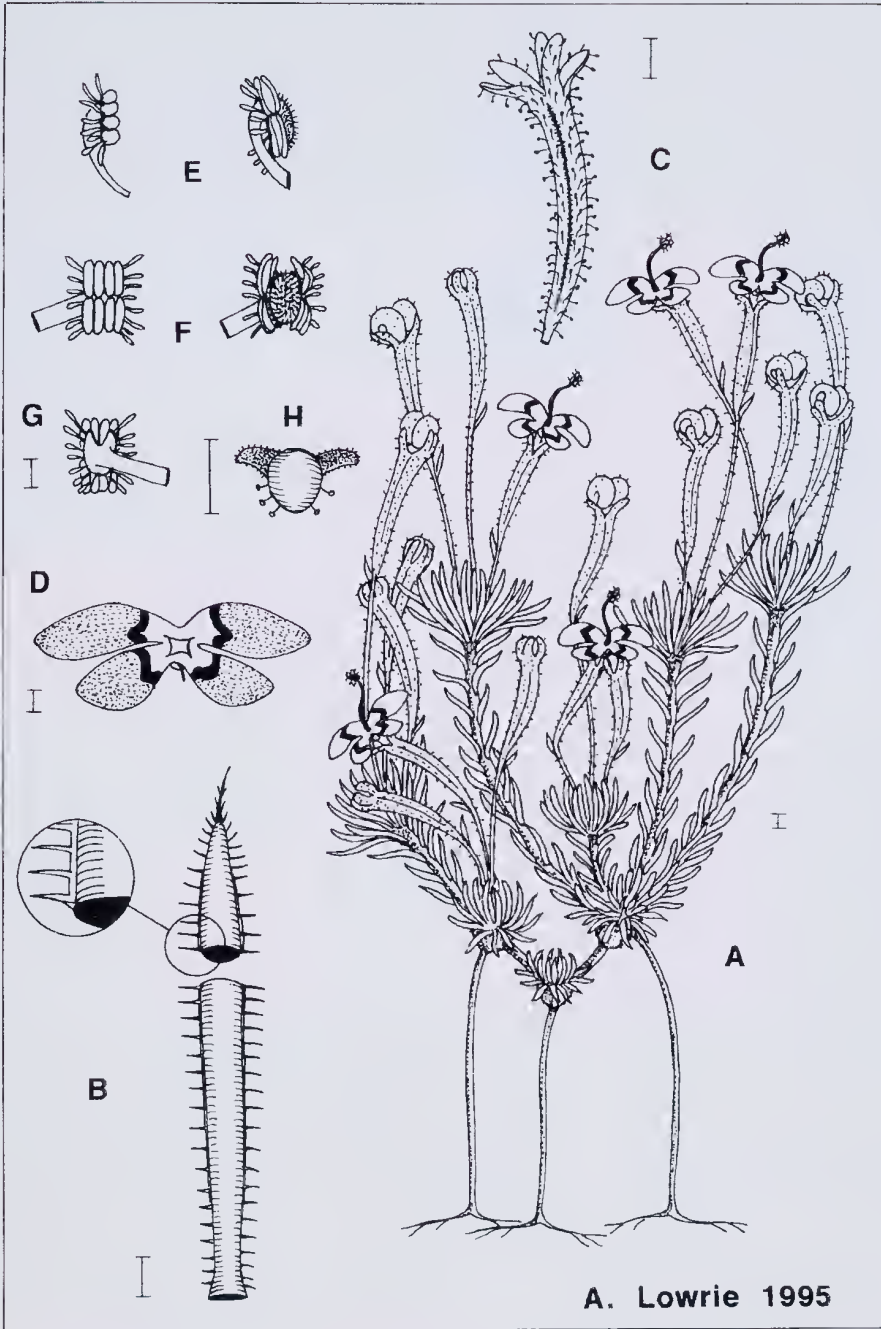
9. *Stylidium cilium* Lowrie, Burbidge & Kenneally, *stat. et nom. nov.*

Stylidium bulbiferum *β ciliatum* Sond. (Sonder 1845:388). – *Stylidium recurvum* var. *ciliatum* (Sond.) Planchon (Planchon 1854:81). *Type:* 'Swan-River' [Western Australia], *J. Drummond* 541 (*lecto:* MEL 672623, here designated; *isolecto:* BM, E, K (2 sheets), W (2 sheets), MEL 672622).

Illustrations. Erickson (1958) page 80, plate 20, figures 1–10. Grieve & Blackall (1982) page 761, n. 90c.

Creeping perennial *herb*; elevated above the soil on stilt roots 1–3.5 cm long, branched a little so as to form a clump up to 12 cm diam. *Stems* between the rosette nodes leafless, 6–12 mm long, flowering stems up to 3 cm long arising singly or in groups of 2–3 from the rosette nodes, bearing leaves along their length and terminating in crowded spreading apical leafy rosette. *Leaves* of the apical rosette linear-lanceolate, 5–8 mm long, 0.5–0.7 mm wide, lenticulate in section, 0.35–0.4 mm thick, with a sharp apical mucro bearing short basal ciliae, 0.5–0.8 mm long, margins ciliate, ciliae 0.3–0.4 mm long; leaves along the flowering stems about half the length of apical rosette leaves, leaf shape and margin ciliae similar but apical mucro very much shorter and blunt. *Inflorescence* uni-flowered, 1.5–3.5 cm high including scape, each apical rosette bearing up to 3 uni-flowered scapes but only ever one flower open in the group at the one time, sparsely glandular; floral bracts and bracteoles similar to the apical rosette leaves, 1.5–3 mm long. *Hypanthium* oblong-falcate at anthesis, 8–10 mm long, 0.7–1 mm wide. *Sepals* 5, all free to the base, oblong, 3 lobes 2.5–3 mm long, 2 lobes 2–2.5 mm long. *Corolla* pink with reddish marks at the bases, abaxial surface pale pink with darker pink marks at the base, sparsely glandular, lobes laterally paired; anterior lobes obovate-elliptic, *c.* 4.7 mm long, *c.* 2.5 mm wide; posterior lobes oblanceolate–slightly falcate, *c.* 6.5 mm long, *c.* 2.2 mm wide. *Throat* yellow, without appendages. *Labellum* boss yellowish orange, sub-orbicular, *c.* 0.7 mm diam. with a few marginal glandular hairs; basal appendages yellow, subulate *c.* 0.5 mm long, papillose. *Gynostemium* 7.5–9 mm long; anthers green, laterally paired, abaxial surface with long translucent white moniliform hairs along the margins, pollen glassy white; stigma elliptic, *c.* 1 mm long, *c.* 0.6 mm wide, cushion-shaped. *Capsule* narrowly ovoid, 10–12 mm long, 2–2.3 mm wide, 8-shaped in section. *Seed* brownish orange, ellipsoid, 0.5–0.6 mm long, 0.3–0.4 mm diam., papillose. (Figure 9)

Other specimens examined. WESTERN AUSTRALIA: 14.4 km S of Calingiri, 20 Oct. 1975, *A.H. Burbidge* 2173 (PERTH); 13 km S of Calingiri, 20 Oct. 1975, *A.H. Burbidge* 2176 (PERTH); turnoff to Dewar's Pool from Great Northern Highway, N of Bindoon, 27 Oct. 1976, *A.H. Burbidge* 2394 (PERTH); 6.1 km E of turnoff to Dewar's Pool from Great Northern Highway, N of Bindoon, 27 Oct.



A. Lowrie 1995

Figure 9. *Stylidium cilium* A - habit of flowering plant; B - leaf; C - hypanthium; D - corolla; E - lateral view of gynostemium tip (with stigma at right); F - face view of gynostemium tip (with stigma grown out, right); G - back of gynostemium; H - labellum. Scale bar = 1 mm. Drawn from A. Lowrie 109 (PERTH).

1976, A.H. Burbidge 2396 (PERTH); 9.2 km E of Great Northern Highway on road to Calingiri, 27 Oct. 1976, A.H. Burbidge 2399 (2 sheets) (PERTH); 8.9 km N of Bolgart, near Wyening, 5 Oct. 1977, A.H. Burbidge 2520 (PERTH); W of Wyening, 5 Oct. 1977, A.H. Burbidge 2522 (PERTH); Bolgart, Sep. 1949, R. Erickson s.n. (2 sheets) (PERTH); 66.5 km N of Perth on Great Northern Highway, Oct. 1965, S.H. James 65.10/59 (2 sheets) (PERTH); 2 miles [3.2 km] S of Calingiri on road to Bolgart, Oct. 1973, S.H. James 73.10/23 (PERTH); 1 mile [1.6 km] W of Bolgart on Bolgart West Road, Sep. 1974, S.H. James 74.9/21 [voucher for chromosome count of $n = 14$] (PERTH); Wongan Hills road between Great Northern Highway and Calingiri, 15 Oct. 1988, A. Lowrie s.n. (PERTH); N side of Wongan Hills–Calingiri Rd, 3.9 km E of Great Northern Highway, 16 Oct. 1990, A. Lowrie 109 (PERTH); on the corner of Great Northern Highway and Hay Flat Rd between Bindoon and New Norcia, A. Lowrie 433 (PERTH) [multi-flowered variant] 42 km S of New Norcia, 13 Oct. 1977, C.I. Stacey 623, (PERTH) [multi-flowered variant].

Distribution. Known from the region bordered by New Norcia, Bindoon, Bolgart and Calingiri.

Habitat. Grows in laterite soils in Eucalypt woodlands.

Flowering period. October.

Chromosome number. $n = 14$, recorded as *Stylidium bulbiferum* Benth. var. *ciliatum* (James 1979, Burbidge & James 1991).

Conservation status. Common and currently not under threat.

Etymology. The epithet from the Latin *cilium* – eye-lash, refers to the leaves being fringed with hairs.

Affinities. The nearest relatives to *Stylidium cilium* are *S. bulbiferum*, *S. megacarpum* and *S. septentrionale*. *S. cilium* is distinguished from these taxa by having the margins of its leaves distinctly ciliate.

Notes. The epithet *ciliatum* could not be taken up for this species as it is already in use for *Stylidium ciliatum* Lindl. (Lindley 1839: 28) which is a member of the *S. piliferum* R. Br. complex.

A variant of this taxon (A. Lowrie 433, C. I. Stacey 623) with 1- as well as 2- and 3-flowered scapes on the same plant is found between Bindoon and New Norcia.

10. *Stylidium megacarpum* Lowrie, Burbidge & Kenneally, *stat. et nom. nov.*

Stylidium bulbiferum var. *macrocarpum* Benth. (Bentham: 1868: 31). *Type:* Harvey River, [Western Australia], *Oldfield* (*lecto:* K, here designated).

Illustration. Grieve & Blackall (1982) page 761, n. 90b.

Creeping perennial *herb*; with many leafy stems arising erect (new inner ones) as well as lax and horizontal with the upper parts bent upwards (older outer ones) from a lignotuber-like rosette node cluster situated mostly on the soil surface but sometimes on short stilt-roots. Leafy stems 4–16 cm long, together either forming an open (in young plants) or crowded (in older plants), erect and lax spreading compact prostrate bush-like clump up to 30 cm in diam. (in open plants), to 45 cm diam.

(in older plants) where nearby asexually reproduced leafy clumps sometimes still attached by leafless horizontal stems have formed additional leafy clumps mostly free of the parent plant but have meshed together to form larger densely compact colonies. *Stems* between the rosette nodes when present leafless, flowering stems up to 16 cm long arising in groups of 2–15 from each lignotuber-like rosette node cluster, bearing leaves along their length and terminating in crowded spreading apical leafy rosette. *Leaves* of the apical rosette linear at anthesis, 12–20 mm long, 0.7–0.1 mm wide at the base, 0.5–0.6 mm wide towards the apex, margins entire except for a ragged translucent white hyaline on each side near base, with a sharp translucent white apical mucro, 0.2–0.5 mm long, juvenile leaves within this same terminal leafy rosette at anthesis bearing a longer apical mucro 0.5–1 mm long and ciliate margins, elliptic in section, 0.3–0.4 mm thick; leaves along the stems similar but about half the length of apical rosette leaves and bearing an apical mucro much shorter and blunt. *Inflorescences* mostly uni-flowered, often 2–3-flowered, sometimes more flowered 1.5–5 cm long including peduncle, peduncles mostly more than 1 per apical leafy rosette, glandular; pedicels when present 5–20 mm long; floral bracts absent on uni-flowered inflorescences, floral bracts when present similar to bractcoles, linear, 2–3 mm long. *Hypanthium* oblong-linear at anthesis, often slightly falcate, 8–20 (mostly 15) mm long, 1–1.4 mm wide. *Sepals* 5, all free to the base, oblanceolate, 2.5–3.5 mm long. *Corolla* various shades of pink, cream or rarely white with reddish purple marks near the petal bases, abaxial surface white, glandular, lobes laterally paired; anterior lobes obovate-elliptic, *c.* 6.5 mm long, *c.* 2.7 mm wide; posterior lobes oblanceolate–slightly falcate, *c.* 8.5 mm long, *c.* 2.5 mm wide. *Throat* pale yellow, with 2 papillose appendages *c.* 0.4 mm long, *c.* 0.2 mm diam. situated at the base of the anterior lobes. *Labellum* boss pale green, broadly ovate, *c.* 0.8 mm long, *c.* 0.9 mm wide; basal appendages reddish, subulate, *c.* 0.5 mm long, papillose. *Gynostemium* 7.5–11.5 mm long, anthers brown, laterally paired, abaxial surface with a few short translucent white moniliform hairs along the margins, pollen cobalt blue; stigma suborbicular, *c.* 1.3 mm diam., cushion-shaped. *Capsule* unknown. *Seed* unknown. (Figure 10)

Other specimens examined. WESTERN AUSTRALIA: Castle Rock Bay, 19 June 1977, A.H. Burbidge 2457 (PERTH); Castle Rock Bay, 26 Oct. 1977, A.H. Burbidge 2529 (PERTH); 0.2 km W of Carbinup Bridge, on Wildwood Rd, 26 Oct. 1977, A.H. Burbidge 2533 [voucher for chromosome count of $2n = 28$] (PERTH); Jindong–Treeton Road, 31 July 1975 (not in flower), S.D. Hopper *s.n.* (PERTH); on Boyanup Rd *c.* 2 km E of South Western Highway, N of Capel, 1 Nov. 1987, A. Lowrie *s.n.* (PERTH); same loc., 1 Nov. 1991, A. Lowrie 460 (PERTH); same loc., 5 Dec. 1996, A. Lowrie 1645 (PERTH); on the corner of Vasse Highway and Acton Park Rd, Busselton, 2 Nov. 1991, A. Lowrie 468 (PERTH); behind general store, Carbinup, S of Busselton, 2 Nov. 1991, A. Lowrie 476 (PERTH); S of carpark, Castle Rock Bay, Meelup, S of Busselton, 2 Nov. 1991, A. Lowrie 477 (PERTH); *c.* 1 km from ocean, Castle Rock Bay, Meelup, S of Busselton, 2 Nov. 1991, A. Lowrie 479 (PERTH); [4 separate collections on one sheet] Harvey River, Oldfield [syntype, top left], [hand written label] ‘fl. rose, dry basalt rocks, C. [Cape] Naturaliste’, no date or collector details [top right], Udoc [?], W. Australia, K.F.G. Logue 7/1889 [bottom left], Swan River district, I.A. Brewer 2/74 [bottom right] (K).

Distribution. Known from the region between Boyanup and Busselton; south to Carbinup River; and west to Cape Naturaliste. Also recorded from Harvey River south of Mandurah but not seen there by us in the field.

Habitat. Grows on the coast, often within 20 metres of the seashore in blackish sand amongst granite boulders; in black peaty sand or red loamy soils in wet depressions inland in sub-coastal regions.

Flowering period. November.

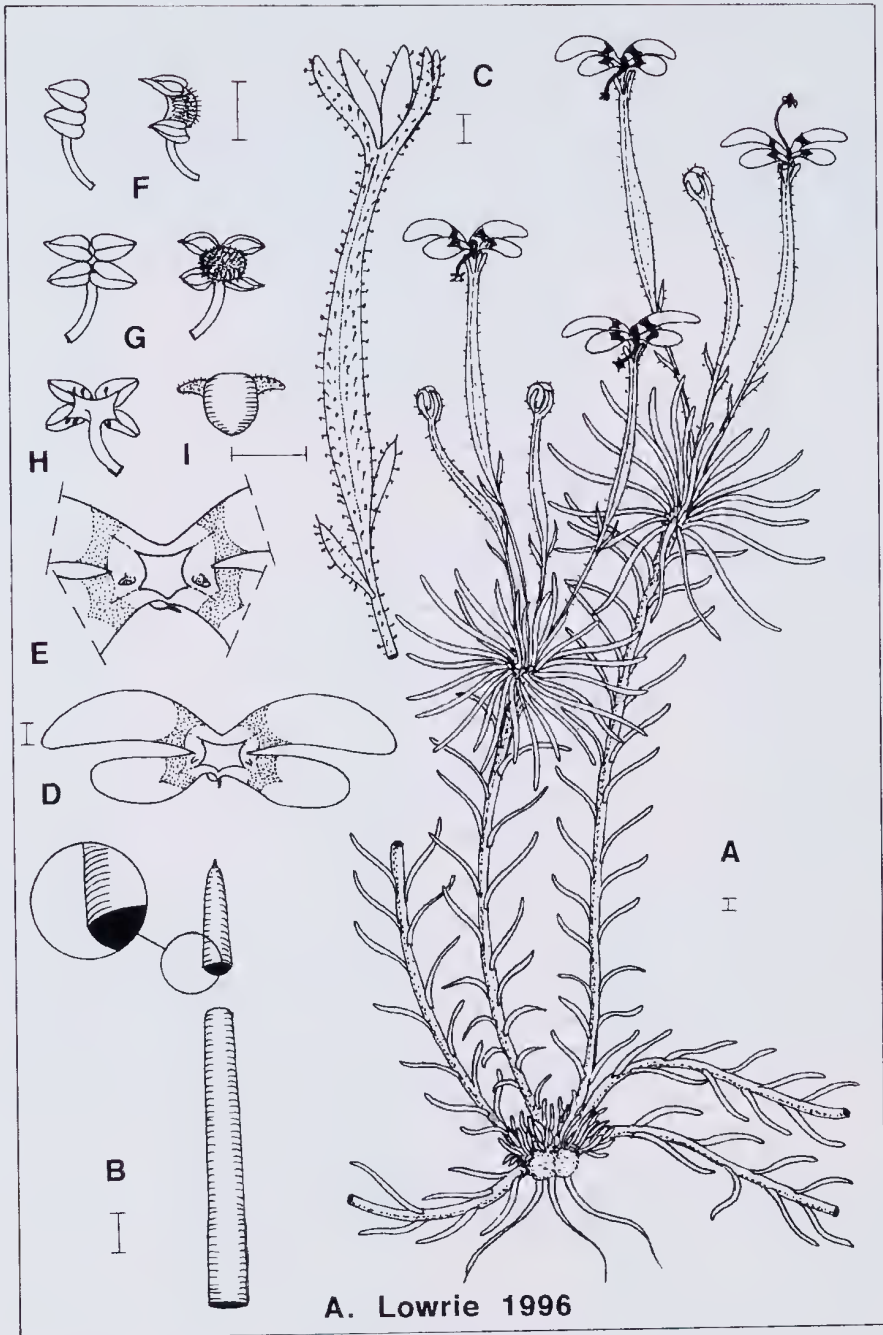


Figure 10. *Styliidium megacarpum* A - habit of flowering plant; B - leaf; C - hypanthium; D - corolla; E - throat appendages, enlarged; F - lateral view of gynostemium tip (with stigma at right); G - face view of gynostemium tip (with stigma grown out, right); H - back of gynostemium; I - labellum. Scale bar = 1 mm. Drawn from A. Lowrie 1645 (PERTH).

Chromosome number. $n=14$, [Forrest Rd, Dunsborough] recorded as *Stylidium* species B (Dunsborough), in Burbidge & James (1991).

Conservation status. Common and currently not under threat.

Etymology. The epithet *megacarpum* from the Greek *mega* – large and *carpus* – fruit, in reference to this species long capsule.

Affinities. The nearest relatives to *Stylidium megacarpum*, are *S. bulbiferum*, *S. cilium*, *S. septentrionale* and *S. uniflorum*. Excluding *S. uniflorum*, *S. megacarpum* can be distinguished from these species by having rosette nodes mostly clustered lignotuber-like on the soil surface with erect as well as lax horizontal spreading leafy stems bearing inflorescences mostly 1-flowered, often 2- or 3-flowered, sometimes with more flowers and peduncles mostly more than 1 per apical leafy rosette; corolla posterior petal pairs *c.* 15 mm across; and hypanthium 8–20 (mostly 15) mm long.

Stylidium uniflorum differs from *S. megacarpum* by having rosette nodes and leafless connecting horizontal stems below the soil surface and caespitose basal leaves.

Notes. The epithet *macrocarpum* could not be taken up for this species as it is already in use for *Stylidium macrocarpum* (Benth.) R. Erickson & J.H. Willis (Erickson & Willis 1955: 135).

The *Stylidium megacarpum* designated lectotype is mounted in the top left corner of a mixed sheet. It was selected because its type location and collector ‘Harvey River, Oldfield’ label immediately below the specimen matched that cited for this taxon when it was known as *S. bulbiferum* var. *macrocarpum*.

Bentham (1868: 31) erroneously indicated that the *Stylidium recurvum* illustration Graham t. 3913 matched Oldfield’s Harvey River collection that has been chosen here as the lectotype. The only other details Bentham recorded in his *S. bulbiferum* var. *macrocarpum* description are ‘Capsule almost sessile, 8 to 9 lines [16.8–18.9 mm] long’. Capsules matching Bentham’s measurements are present on the Harvey River specimen, but *Stylidium recurvum* appears to be a synonym of *S. bulbiferum* (see notes under that species) and to have much shorter capsules.

A specimen of *Stylidium megacarpum* from Cape Naturaliste, placed top right on the ‘Harvey river, Oldfield’ K sheet shares the same ‘FLORA AUSTRALIENSIS, named by Mr BENTHAM.’ printed label. This specimen was not cited by Bentham in his *Stylidium bulbiferum* var. *macrocarpum* treatment. The two collections at the bottom of the same sheet are also *S. megacarpum*.

11. *Stylidium septentrionale* (Mildbr.) Lowrie, Burbidge & Kenneally, *stat. nov.*

Stylidium bulbiferum var. *septentrionale* Mildbr. (Mildbraed 1908: 92–93). *Type:* ‘Distr. Irwin: Victoria, zwischen Champion Bay [Geraldton] und White Peak auf sandigem oder kiesigem Boden an kahlen Stellen’, Western Australia, September 1901, *E. Pritzel* 635 (*lecto:* W, here designated; *isolecto:* PERTH, K, B); same location, *L. Diels* 4148 (*syn:* B, *n.v.*); Oakagece, Western Australia, Oldfield 393 (*syn:* MEL 672620, 672621).

Illustration. Erickson (1958) colour plate 16, figure 7. Grieve & Blackall (1982) page 761, n. 90d.

Creeping perennial *herb*; elevated above the soil on stilt roots up to 3 cm long, irregularly branched so as to form a tangled matted network up to 15 cm diam. *Stems* between the rosette nodes leafless, 10–20 mm long, flowering stems up to 3 cm long, 1–3 arising from the rosette node junctions, bearing a few leaves along their length and terminating in crowded spreading apical leafy rosette. *Leaves* of the apical rosette linear, 6–12 mm long, 0.5–0.6 mm wide, mostly with a blunt apical mucro 0.1–0.2 mm long, margins bearing a fine irregularly serrate edged translucent white hyaline, increasing in width towards the base, terete in the upper parts, lenticulate in section in the lower parts, 0.4–0.6 mm thick; leaves along the stems similar but c. half the length of apical rosette leaves and apical mucro much shorter and blunt. *Inflorescence* 3–3.3 cm long including peduncle, peduncle 2 cm long, forming a panicle, glandular; pedicels 1–2.5 mm long; floral bracts linear, 3–4 mm long; bracteoles subulate, 1–1.5 mm long. *Hypanthium* oblong at anthesis, 4–5 mm long, 0.8–1.2 mm wide, 8-shaped in section, glandular. *Sepals* 5, all free to the base, oblanceolate, 1–1.5 mm long. *Corolla* pink with whitish yellow near the petal bases, abaxial surface pale pink, glandular, lobes laterally paired; anterior lobes obovate-elliptic, c. 4.5 mm long, c. 2 mm wide; posterior lobes elliptic, c. 5.5 mm long, c. 2.7 mm wide. *Throat* whitish yellow, without appendages. *Labellum* boss pale yellow, broadly ovate, c. 0.8 mm long, c. 0.7 mm wide, margins with a few glandular hairs; basal appendages subulate, red-tipped, c. 0.2 mm long, papillose. *Gynostemium* 5–7 mm long, anthers blackish, laterally paired, abaxial surface with a few short translucent white moniliform hairs along the margins, pollen white; stigma elliptic, c. 1.5 mm long, c. 0.8 mm wide, cushion-shaped. *Capsule* oblong, 5–9 mm long, 1.2–1.4 mm wide, 8-shaped in section. *Seed* brown, ± ovoid-ellipsoid, with 4 flat sides, 0.5–0.8 mm long, 0.25–0.3 mm diam., papillose. (Figure 11)

Other specimens examined. WESTERN AUSTRALIA: Yandanooka (breakaway country), 1932, *A.M. Baird s.n.* (PERTH); 6 km N of turnoff to Yerina Spring, 20 Sep., *A.H. Burbidge s.n.* (PERTH); White Peak, N of Geraldton, 10 Sep. 1953, *R. Erickson s.n.* (PERTH); Eneabba–Three Springs road, 5 Aug. 1975 (not in flower), *S.D. Hopper s.n.* (PERTH); 10 km N of Yillingarra West Road along Mogumber–Moora road, 14 Oct. 1976, *S.D. Hopper s.n.* (PERTH); 212 miles [339.2] N of Perth on the Geraldton Highway, Sep. 1972, *S.H. James 72.9/1* (PERTH); 7.9 km SW of Three Springs on Eneabba road, 5 Sep. 1975, *S.H. James 75.9/3* [voucher for chromosome count of $n = 14$] (PERTH); Gillingarra, 5 Oct. 1988, *A. Lowrie s.n.* (PERTH); Bindoon–Moora Highway, 0.6 km S of Gillingarra, 20 Oct. 1989, *A. Lowrie s.n.* (PERTH); on the corner of Lynch Rd and Three Springs–Morawa road, 22 Sep. 1990, *A. Lowrie 266* (PERTH); on Midlands Rd, 12.6 km N W of Three Springs, 28 Sep. 1991, *A. Lowrie 353* (PERTH); White Peak, c. 2 km E of the highway N of Geraldton, 7 Oct. 1991, *A. Lowrie 370* (PERTH); c. 25 km E of Kalbarri, on Ajana–Kalbarri road, 4 Sep. 1992, *A. Lowrie 642* (PERTH); Table Hill, in rocky places, no date, *F. Muell. s.n.* (MEL).

Distribution. Widely distributed from Kalbarri; south to Yandanooka east of Dongara; east to Three Springs; and south to Mogumber.

Habitat. Grows in laterite soils or in clayey sand over granite.

Flowering period. September, October.

Chromosome number. $n = 14$, (James 1979).

Conservation status. Common and currently not under threat.

Etymology. The epithet *septentrionale* from the Latin *septentrionalis* – northern, in reference to this species belonging to the north.

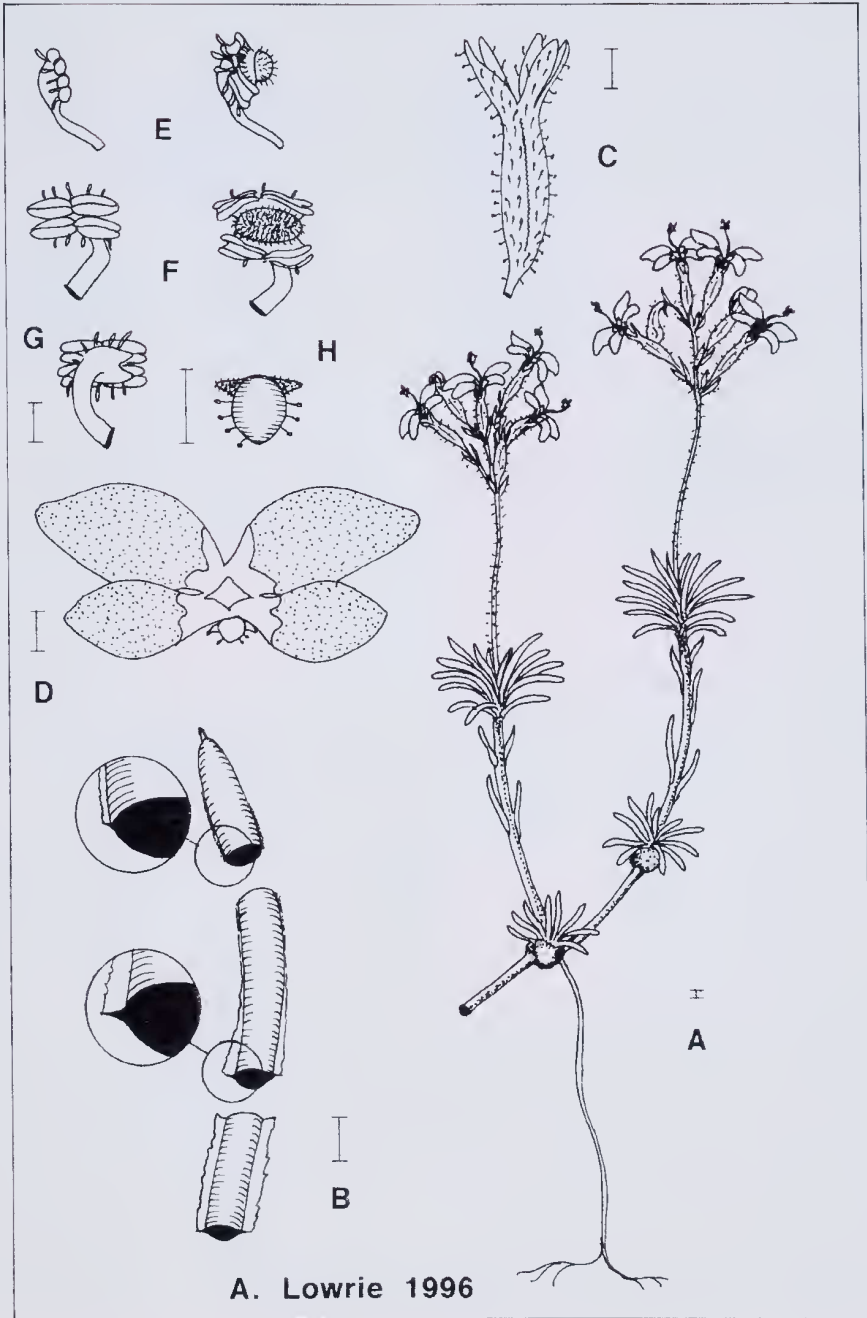


Figure 11. *Styliidium septentrionale* A - habit of flowering plant; B - leaf; C - hypanthium; D - corolla; E - lateral view of gynostemium tip (with stigma at right); F - face view of gynostemium tip (with stigma grown out, right); G - back of gynostemium; H - labellum. Scale bar = 1 mm. Drawn from A. Lowrie 370 (PERTH).

Affinities. The nearest relatives to *Styloidium septentrionale* are *S. bulbiferum*, *S. cilium* and *S. megacarpum*. *S. septentrionale* can be distinguished from these taxa by all leaves mostly having a short blunt apical mucro; peduncle mostly 2–3 times longer than the inflorescence; and hypanthium 4–5 mm long.

Notes. We have selected the *E. Pritzel* 635 collection in W for the lectotype as it has been annotated by Mildbraed. Mildbraed's type location 'between Champion Bay and White Peak' is much more precise than the recorded location 'In fruticetis inter flumina Moore et Murchison' on the lectotype *E. Pritzel* 635. The area between Champion Bay [Geraldton] and White Peak [c. 20 km northwards] is situated c. 300 km north of the Moore River and c. 80 km south of the Murchison River.

Our description and illustration were taken from specimens collected from White Peak (*A. Lowrie* 370). Specimens from Gillingarra (near the Moore River) and the Three Springs–Morawa road are always much larger specimens than those found between Geraldton and White Peak. However, regardless of specimen size the peduncles are mostly 2–3 times longer than the inflorescence.

12. *Styloidium dielsianum* E. Pritz. (Diels & Pritzel 1905: 596). *Type:* pr. Southern Cross [near Southern Cross, Western Australia], in solo argilloso interdum inundato, *E. Pritzel* 871. (*lecto:* W, here designated; *isolecto:* B, K, PERTH, NSW); in distr. Coolgardie pr. Golden Valley, [Western Australia], [1888], *Merrall* (*syn:* MEL 672619).

Illustrations. Erickson (1958) colour plate 16, figure 2. Grieve & Blackall (1982) page 761, n. 91. Mildbraed (1908) page 90, figure 26, A–D.

Creeping perennial *herb*; mostly appressed to the soil surface and irregularly branched so as to form a spreading tangled matted network up to 100 cm diameter, or when elevated above the soil, 2.5–7 cm high on stilt roots 1–4 cm long. *Stems* between the rosette nodes greyish, leafless, 1–15 cm long, rosette nodes often retaining a tuft of leaves, flowering stems straw coloured, 1–15 cm long arising from the rosette node junctions when short or appressed to the soil surface when long, bearing persistent appressed leaves and terminating in an apical leafy rosette. *Leaves* clavate, lenticulate in section in the lower parts, trigonal in the upper parts, with a longitudinal ridge-like keel on the apical abaxial leaf surface, basally rounded, 6–12 mm long, 0.6–1 mm wide near the apex, 0.4–0.5 mm at the base, rounded base 0.8–1 mm long, 0.6–0.8 mm wide, apical mucro white, shortly pointed and/or absent even on the same specimen, rounded base opposite margins white, winged-serrate, hyaline margins white, mostly crenate, often serrulate, or a combination of both. *Inflorescence* forming a narrow panicle, 2–8-flowered, 1–3 cm high including peduncle, densely covered with long and short glandular hair; pedicels 1–2.5 mm long; floral bracts and bracteoles, similar to the leaves, floral bracts 4–6 mm long; bracteoles 2.5–3.5 mm long. *Hypanthium* oblong at anthesis, 3.5–6 mm long, 0.8–1.4 mm wide, densely glandular. *Sepals* 5, 3 ovate, free to the base, the central lobe often slightly longer, 2 obovate, joined for almost half their length, 1.6–2 mm long, densely glandular. *Corolla* pink with reddish purple marks near the base of the lobes, abaxial surface pink with reddish stripes, slightly glandular lower on the lobes and extending onto the corolla tube, laterally paired; anterior lobes obovate c. 3 mm long, c. 2 mm wide, posterior lobes obovate, c. 4 mm long, c. 1.2 mm wide. *Throat* white surrounded by a little yellow, without appendages. *Labellum* boss yellow, ovate, c. 0.8 mm long, c. 0.5 mm wide; with a red short apical beard flanked by 2 small bump-like appendages; basal appendages reddish orange, subulate, apex rounded, c. 1.5 mm long, c. 0.3 mm wide. *Gynostemium* 7–10 mm long, anthers olive green, vertical paired, abaxial surface with long translucent white moniliform hairs along the margins, pollen greyish green; stigma elliptic, c. 0.9 mm long, c. 0.6 mm wide, cushion-shaped. *Capsule* unknown. *Seeds* unknown. (Figure 12)

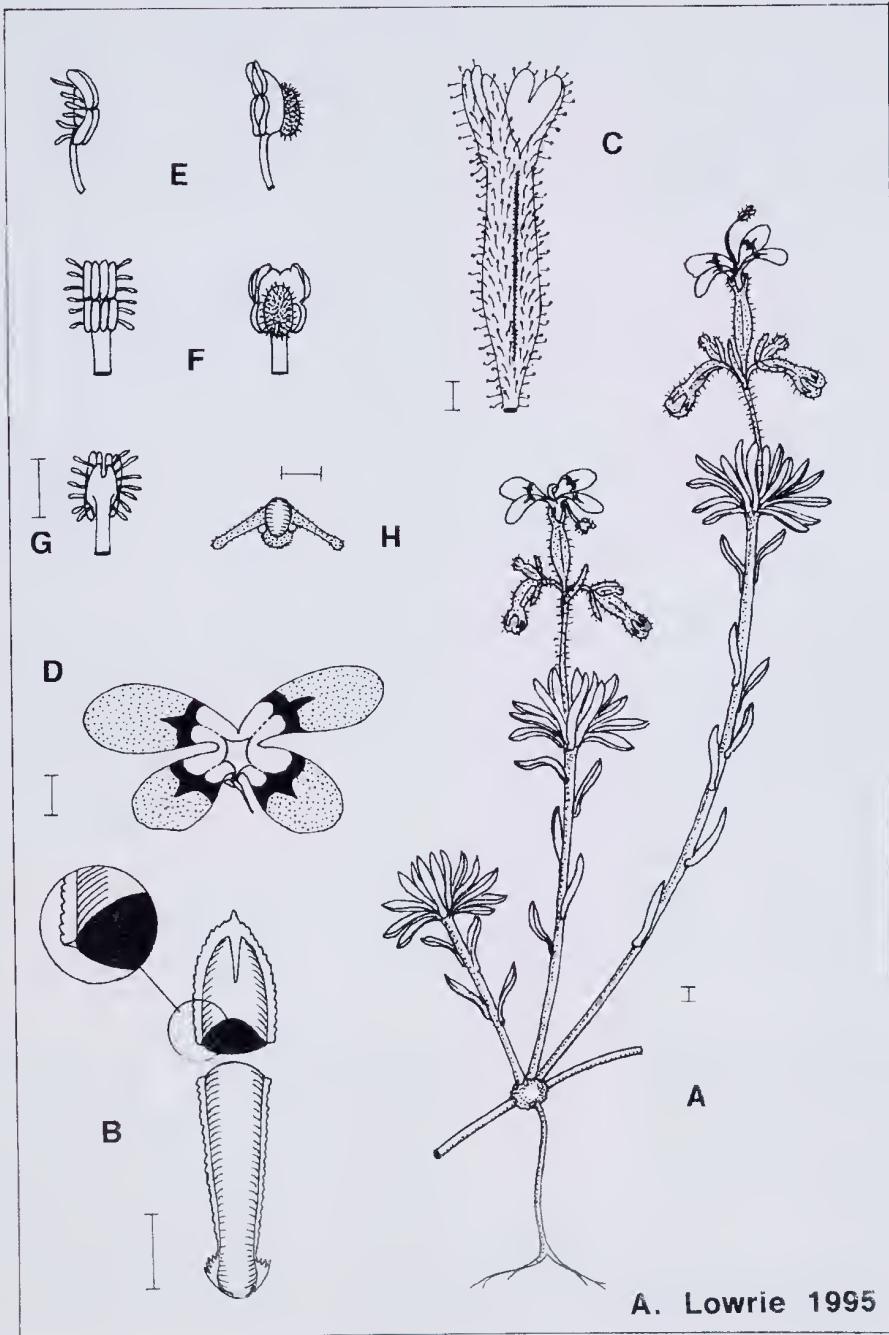


Figure 12. *Styliidium dielsianum* A - habit of flowering plant; B - leaf; C - hypanthium; D - corolla; E - lateral view of gynostemium tip (with stigma at right); F - face view of gynostemium tip (with stigma grown out, right); G - back of gynostemium; H - labellum. Scale bar = 1 mm. Drawn from A. Lowrie s.n. 1 Oct. 1989 (PERTH).

Other specimens examined. WESTERN AUSTRALIA: 10 km S of Queen Victoria Rock, 2 Sep. 1975, A.H. Burbidge 2051 (PERTH); 80.1 km E of Lake King, 25 Oct. 1975, A.H. Burbidge 2201 (PERTH); Peak Charles, 26 Oct. 1975, A.H. Burbidge 2206 (PERTH); Southern Cross, Aug. 1952, R. Erickson s.n. (PERTH); Walgoolan (E of Merredin), 1 Oct. 1955, R. Erickson s.n. (K); 4 miles [6.4 km] E of Boorabbin, Oct. 1963, S.H. James 63.10/1 [voucher for chromomc count of $n=15$] (PERTH); Bencubbin–Trayning, Aug. 1966, S.H. James 66.8/35 [voucher for illustration of *Stylidium dielsianum* (Grieve & Blackall 1982: 761)] (PERTH); Merredin, 9 Oct. 1923, M. Koch s.n. (K); 5.5 km E of Merredin, 1 Oct. 1989, A. Lowrie s.n. (PERTH); Hatter's Hill–Varley road, 9.3 km W of the state barrier vermin fence, 17 Oct. 1990, A. Lowrie 120 (PERTH); entrance to Mangowine Homestead near the base of Mount Grey, 13 Oct. 1991, A. Lowrie 403 (PERTH); Merredin–Bruce Rock road, 5 km W of Bruce Rock, Eujiny, 15 Aug. 1992, A. Lowrie 609 (PERTH); Parker's Range, 1890, E. Merrall s.n. (MEL).

Distribution. Widely distributed in the region bordered by Mukinbudin in the north; south-west to Trayning; south-east to Merredin; south to Bruce Rock; south-east to Varley; east to Peak Charles; north to Queen Victoria Rocks south-west of Coolgardie; and west to Southern Cross.

Habitat. Grows in clayey sand or red loamy sand in woodlands and open shrublands.

Flowering period. October, November.

Chromosome number. $n = 15$ (James 1979, Burbidge & James 1991).

Conservation status. Common and currently not under threat.

Etymology. The epithet *dielsianum* honours Friedrich Ludwig Emil Diels (1874–1945) a director of the Berlin botanical gardens. During 1900–1901, he and E. Pritzel travelled widely in south-west Australia and collected about 5700 botanical specimens. Their joint work, *Fragmenta Phytographiae Australiae Occidentalis* is one of the major authorities on the Western Australian flora.

Affinities. Its nearest relatives are *S. induratum* and *S. warriedarensense*. *S. induratum* differs in having linear leaves, semi-lenticulate in section, with a serrate hyaline margin and apical mucro; plants forming erect compact bushes 10–22 cm high including the stilt roots; and labellum boss c. 0.5 mm wide, with basal appendages c. 0.5 mm long.

S. warriedarensense differs in having spatulate leaves, lunate in section, with an irregularly serrate–lacinate hyaline margin and apical mucro; plants only on stilt roots mostly confined to small clumps; and labellum boss c. 0.4 mm wide, with basal appendages c. 0.7 mm long.

Notes. We have selected the E. Pritzel 871 collection in W for the lectotype as it has been annotated by Mildbraed.

13. *Stylidium induratum* M. Scott (Scott 1915: 90). *Type:* Victoria Desert: Camp 54 (Elder Exploring Expedition), [Mound Spring, McKay's Creek, Western Australia, 29° S, 125° E], September [1891], R. Helms (*lecto:* K, here designated; *isolecto:* NSW 154814).

Illustrations. Erickson (1958) page 78, plate 19, figures 10–11. Grieve & Blackall (1982) page 762, n. 92.

Creeping perennial *herb*; elevated above the soil on stilt roots up to 8 cm long and irregularly branched and forming an erect compact bush 10–22 cm high, up to 20 cm diameter. *Stems* between the rosette nodes greyish, leafless, 1–8 cm long, rosette nodes often retaining a tuft of leaves, flowering stems 2–6 cm long arising from the rosette node junctions, bearing persistent leaves along their length and terminating in an apical leafy rosette. *Leaves* linear, semi-lenticulate in section, with a longitudinal ridge-like keel on the apical abaxial surface, 5–10 mm long, 0.8–1 mm wide near the apex, narrowed to 0.6–0.7 mm wide near the base, 0.8–1 mm wide at the base, spur-like base rounded 0.3–0.7 mm long, opposite margins white, winged-serrate, apical mucro white, sharp, 0.3–0.5 mm long, hyaline margins white, serrate. *Inflorescence* paniculate, 8–15-flowered, 3–5 cm high including peduncle, densely covered with long and short glandular hairs; pedicels 0.5–2.5 mm long; floral bracts and bracteoles, similar to the leaves, floral bracts 6–8 mm long; bracteoles 2–3 mm long. *Hypauhium* oblong at anthesis, 5.5–7 mm long, 1–1.8 mm wide, glandular. *Sepals* 5, 2–4 mm long, glandular, 3 narrowly-ovate, free to the base, 2 obovate, joined for *c.* two thirds of their length. *Corolla* pink with dark pink marks near the base of the lobes, abaxial surface pink, dark pink and slightly glandular along the mid-vein, laterally paired; anterior lobes obovate *c.* 4 mm long, *c.* 2.2 mm wide, posterior lobes elliptic, *c.* 4 mm long, *c.* 2.3 mm wide. *Throat* white, without appendages. *Labellum* boss pale green, ovate, *c.* 0.7 mm long, *c.* 0.5 mm wide; with an apical short reddish serrate-papillose beard; basal appendages reddish, subulate, papillose, *c.* 0.5 mm long. *Gynostemium* 9.5–11.5 mm long, anthers yellow, vertical-paired, abaxial surface with short translucent white moniliform hairs along the margins, pollen white; stigma round, *c.* 0.5 mm diam., cushion-shaped. *Capsule* 7.5–10 mm long, 2–2.5 mm wide. *Seeds* light brownish orange, ovoid, 0.4–0.5 mm long, 0.45–0.5 mm diam., bullate. (Figure 13)

Other specimens examined. WESTERN AUSTRALIA: Anketell on Sandstone–Mount Magnet road, 13 Sep. 1968, *A.M. Ashby* 2601 (PERTH); Queen Victoria Springs, 26 Jan. 1959, *W.H. Butler s.n.* (PERTH); Queen Victoria Springs, Great Victoria Desert, 19 Oct. 1995, *D.J. Edinger* 1026 (PERTH); 12 miles [19.2 km] W of Sandstone, Oct. 1947, *F.G. Forman s.n.* (PERTH); 15 miles [24 km] SW of Youanmi on road to Paynes Find, 20 Oct. 1962, *D.W. Goodall* 47 (PERTH); 3 miles [4.8 km] S of Paynes Find on Great Northern Highway, Aug. 1973, *S.H. James* 73.8/5 (PERTH); on road from Cue to Sandstone, 1.6 km E of Pinnacles turn off, 14 Aug. 1993, *A. Lowrie* 799 (PERTH); on road from Cue to Sandstone, 1.6 km E of Pinnacles turn off, 9 Oct. 1995, *A. Lowrie* 1348 (PERTH).

Distribution. Known from scattered locations in the region bordered by Paynes Find; north to Cue; east to Sandstone; and south to Anketell east of Mount Magnet. Also known from the type location in the Great Victoria Desert *c.* 230 km north of Rawlinna on the Trans-Australian Railway on the Nullarbor Plain.

Habitat. Grows in sandy soils caught in gnammas on the flat-topped summits of breakaways.

Flowering period. September, October.

Chromosome number. Unknown.

Conservation status. Common and currently not under threat.

Etymology. The epithet *induratum* is from the Latin *induratus* – hardened, in reference to the hard white thickening (hyaline) of the leaf margins.

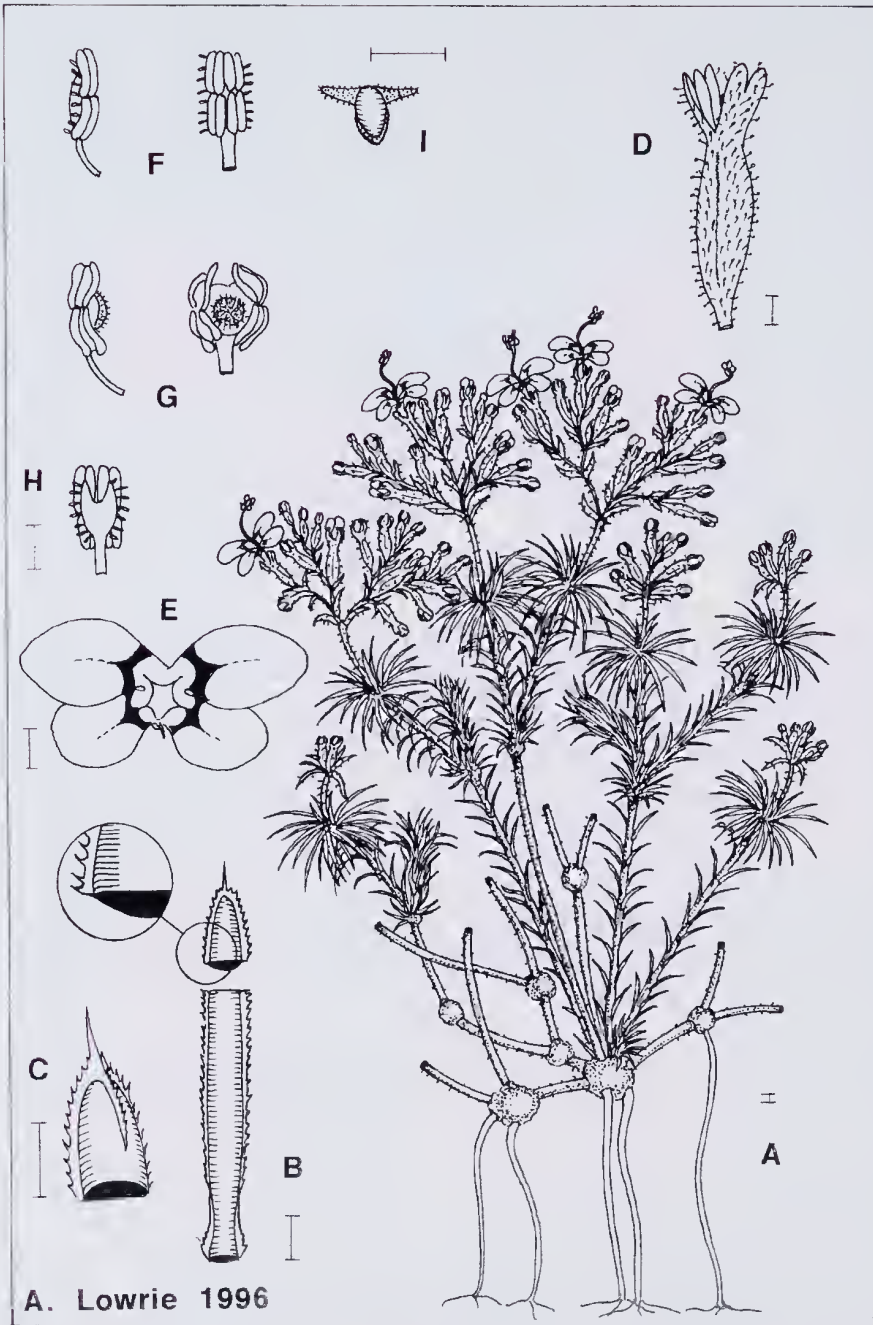


Figure 13. *Styliidium induratum* A – habit of flowering plant; B – leaf; C – enlarged abaxial view of leaf tip, serrate hyaline margins, keel and mucro; D – hypanthium; E – corolla; F – lateral view of gynostemium tip (with stigma at right); G – face view of gynostemium tip (with stigma grown out, right); H – back of gynostemium; I – labellum. Scale bar = 1 mm. Drawn from A. Lowrie 799 (PERTH).

Affinities. Its nearest relatives are *Stylidium dielsianum* and *S. warriedarensis*. *S. dielsianum* differs in having clavate leaves, lenticulate in section in the lower portion, trigonal in the upper portion, with hyaline margin mostly crenate, often serrulate or a combination of both and apical mucro very short or absent; plants spreading widely over the soil surface mostly appressed to the soil surface or 2.5–7 cm high when elevated on stilt roots; and labellum boss c. 0.5 mm wide, with basal appendages c. 1.5 mm long.

Stylidium warriedarensis differs in having spatulate leaves, lunate in section, with an irregularly serrate-laciniate hyaline margin; plants only on stilt roots mostly confined to small clumps; and labellum boss c. 0.4 mm wide, with basal appendages c. 0.7 mm long.

Notes. We have selected the sheet housed at K as the lectotype for *Stylidium induratum*, which is very similar to the isolectotype housed at NSW, because of the additional information attached to the K sheet. Along with a copy of the published description, there are also detailed pencil sketches of the floral parts. These were drawn by Rica Erickson from this material at Kew on the 11 Nov. 1955. These sketches provided the study for the pen and ink drawings of *S. induratum* published by Erickson (1958).

Stylidium induratum, *S. dielsianum* and *S. warriedarensis* can sometimes, in addition to their own distinctive leaf type, exhibit a small number of either one or both relative's leaf types in the early stages of new growth. It is not until leafy growth arises a little above the rosette node that the characteristic leaf type of each species is consistently produced.

14. *Stylidium warriedarensis* Lowrie, Burbidge & Kenneally, *sp. nov.*

Stylidium dielsianum E. Pritz. affinis sed foliis spatulatis, in sectione lunatis, marginibus hyalinis irregulariter serrato-lacinatis differt.

Typus: Warriedar–Perenjori road, 29.9 km W of the Warriedar Homestead front gate, Western Australia, 28 September 1991, A. Lowrie 342 (*holo:* PERTH 05091349; *iso:* MEL).

Creeping perennial *herb*; elevated above the soil on stilt roots up to 2.5 cm long and irregularly branched so as to form a network up to 7 cm high and generally up to 15 cm diameter. *Stems* between the rosette nodes greyish, leafless, 1–4 cm long, rosette nodes often retaining a tuft of leaves, flowering stems mostly 1–9 cm long but sometimes up to 20 cm long (shorter ones erect, longer ones spreading), arising from the rosette node junctions, bearing a few persistent leaves along their length and terminating in an apical leafy rosette. *Leaves* spatulate, lunate in section, with a longitudinal ridge-like keel on the abaxial leaf surface in the upper part, 5–7 mm long, 1.3–1.5 mm wide near the apex, 0.6–0.8 mm wide at the base, spur-like base straw-coloured, rounded, apical mucro sharp, white, 0.1–0.3 mm long, rounded base opposite margins white, winged-entire, leaf hyaline margins white, irregularly serrate-laciniate. *Inflorescence* paniculate, 5–10-flowered, 2–3 cm high including peduncle, densely covered with long and short glandular hairs; pedicels 0.5–2.5 mm long; floral bracts and bracteoles, similar to the leaves, floral bracts 3–6.5 mm long; bracteoles 2–3 mm long. *Hypanthium* oblong at anthesis, 4–7 mm long, 1–1.5 mm wide, glandular. *Sepals* 5, 3 narrowly-ovate, free to the base, 2 obovate, joined for two thirds of their length, c. 2 mm long, glandular. *Corolla* white or pink with reddish purple marks near the base of the lobes, abaxial surface white or pink, slightly glandular, laterally paired; anterior lobes obovate c. 4.5 mm long, c. 2.5 mm wide, posterior lobes elliptic, c. 5 mm long, c. 2.5 mm wide. *Throat* pale green, without appendages. *Labellum* boss pale green, ovate, c. 0.7 mm long, c. 0.4 mm wide; with reddish short apical papillose point and margins; basal appendages reddish, subulate, papillose, c. 0.7 mm long. *Gynostemium* 4.5–7.5 mm long, anthers

pale yellow, vertical-paired, abaxial surface with very short translucent white moniliform hairs along the margins, pollen pale yellow; stigma elliptic, *c.* 0.7 mm long, *c.* 0.6 mm wide, cushion-shaped. *Capsule* 6.5–7 mm long, 1.5–2 mm wide. *Seeds* rust orange, subglobose, 0.35–0.4 mm long, 0.4–0.5 mm diam., papillose. (Figure 14)

Other specimens examined. WESTERN AUSTRALIA: *c.* 12 km E of Mullewa on the road between Mullewa and Yalgoo, 4 Oct. 1966, *E.M. Bennett* 1523 (PERTH); 15 km E of Mullewa along road to Pindar, 6 Oct. 1991, *W. Greuter* 22575 (PERTH); 221 mile [353.6 km] peg on Wubin–Paynes Find section of Great Northern Highway, Aug. 1973, *S.H. James* 73.8/4 [juvenile inflorescence] (PERTH); S of Johnson Rocks, 6 Nov. 1991, *G.J. Keighery* 12448 (PERTH); Wubin Rocks, 6 Sep. 1997, *A. Lowrie* 1846 [voucher for chromosome count of $n=30$] (PERTH); Mt Farmer, 6 Sep. 1991, *D. E. Murfet* 1129 (PERTH); White Wells turn off, 7 Sep. 1991, *D.E. Murfet* 1132 (PERTH); Mt Gibson 29° 36'S, 117° 11' E, 4 Oct. 1984, *B.H. Smith* 463 (PERTH); 32 km W of Warriedar Homestead, 26 Sep. 1986, *P.G. Wilson* 12287 (PERTH).

Distribution. Known from scattered locations in the region bordered by Mullewa, south to Wubin, and north-east to Warriedar. Also known from yellow sand plain country *c.* 300 km east of the type location, *c.* 20 km south of Johnson Rocks.

Habitat. Grows in red loam-laterite soils, red sandy loam in mulga scrub or yellowish sand on heathland.

Flowering period. September, October.

Chromosome number. $n = 30$, S.H. James & A. Lowrie (previously unpublished data).

Conservation status. Common and currently not under threat.

Etymology. The epithet *warriedarensis* refers to the Warriedar Sheep Station *c.* 55 km west-north-west of Paynes Find in south-west Western Australia where this species was first discovered.

Affinities. Its nearest relatives are *Stylidium induratum* and *S. dielsianum*. *S. induratum* differs in having linear leaves, semi-lenticulate in section, with a serrate hyaline margin and apical mucro; plants forming erect compact bushes 10–22 cm high, including the stilt roots; and labellum boss *c.* 0.5 mm wide, with basal appendages *c.* 0.5 mm long.

Stylidium dielsianum differs in having clavate leaves, lenticulate in section in the lower portion, trigonal in the upper portion, with hyaline margin mostly crenate, often serrulate or a combination of both and apical mucro very short or absent; plants spreading widely over the soil surface mostly appressed to the soil surface or 2.5–7 cm high when elevated on stilt roots; and labellum boss *c.* 0.5 mm wide, with basal appendages *c.* 1.5 mm long.

15. *Stylidium diplectroglossum* (R. Erickson & J.H. Willis) Lowrie, Burbidge & Kenneally, *stat. nov.*

Stylidium repens var. *diplectroglossum* R. Erickson & J.H. Willis (Erickson & Willis 1956: 15). *Type:* from the plains between Kendenup and Mondurup Peak in the Stirling Range, Western Australia, November 1953, *C. Morris* s.n. (*holo:* MEL; *iso:* PERTH 1642014).

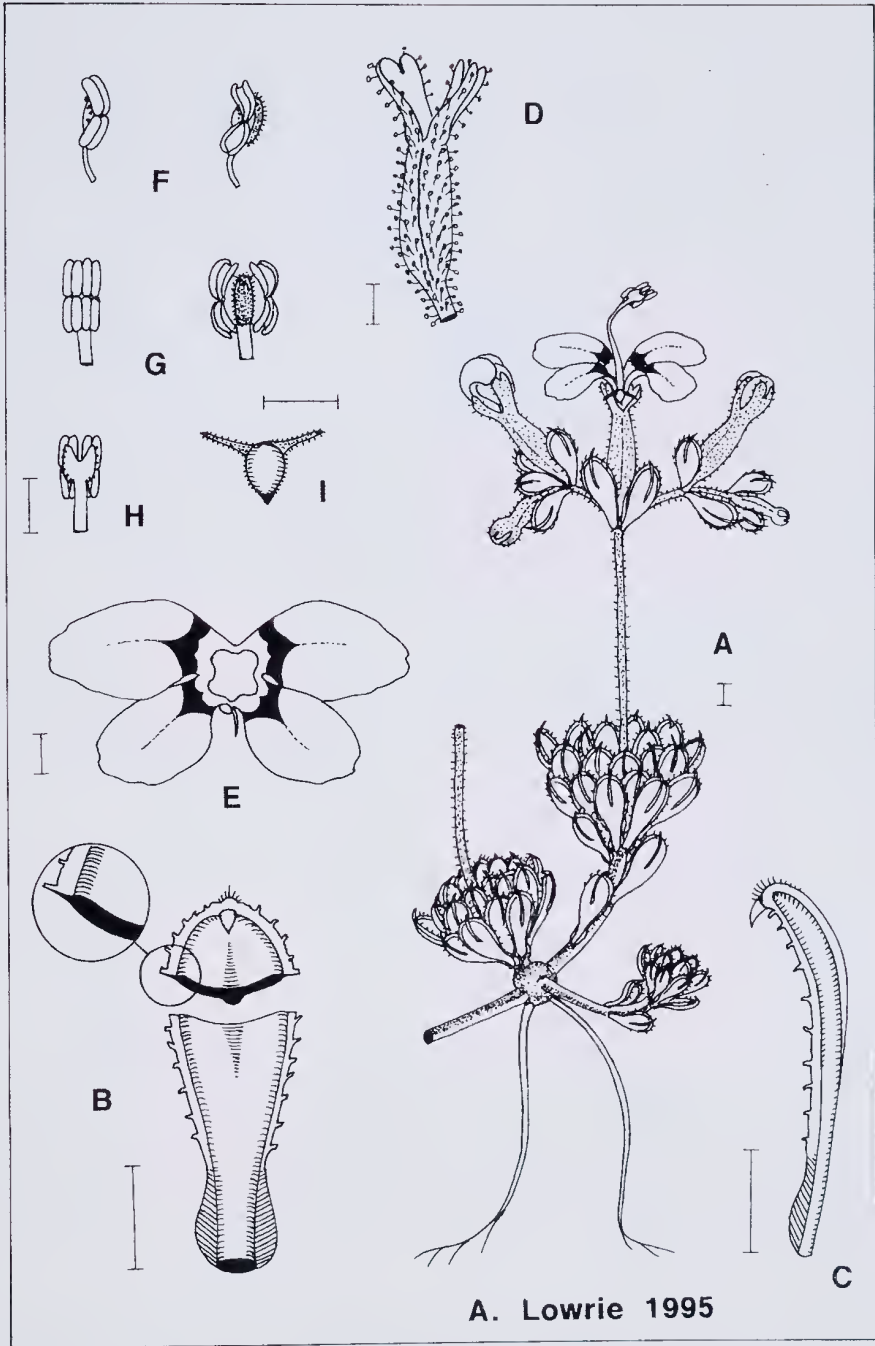


Figure 14. *Styliidium warriedarens* A - habit of flowering plant; B- leaf; C- lateral view of leaf, serrate-lacinate hyaline margins, keel and mucro; D - hypanthium; E - corolla; F - lateral view of gynostemium tip (with stigma at right); G - face view of gynostemium tip (with stigma grown out, right); H - back of gynostemium; I - labellum. Scale bar = 1 mm. Drawn from P.G. Wilson 12287 (PERTH).

Illustrations. Erickson (1958) page 72, plate 17, figures 9–16. Grieve & Blackall (1982) page 762, n. 93a.

Creeping perennial *herb*, elevated above the soil on stilt roots up to 2 cm long and irregularly branched so as to form a tangled matted network up to 100 cm diameter. *Stems* between the rosette nodes leafless 1–4 cm long, flowering stems 1–5 cm long arising from the rosette node junctions which often still retain a tuft of leaves, bearing persistent appressed leaves along their length and terminating in compact apical leafy rosette. *Leaves* linear, 3.5–4.5 mm long, 0.4–0.5 mm wide, apical mucro sharp, translucent white, 0.1–0.4 mm long, basal spur translucent white, 0.5–0.7 mm long, hyaline margins translucent white, irregularly serrate. *Inflorescence* uni-flowered, hypanthium mostly held above the terminal leafy rosette, peduncle 4–7 mm long, pilose-glandular (each pilose hair twisted and curled irregularly along its length and tipped with a gland); floral bracts and bracteoles not visible. *Hypanthium* oblong-elliptic at anthesis, 3–3.5 mm long, 0.7–1.2 mm wide, sparsely pilose-glandular. *Sepals* 5, all free to the base, subulate, 1.5–2.5 mm long, margins and apical mucro translucent white, margins serrate, glabrous. *Corolla* pink with dark pink marks near the base of the lobes, abaxial surface pink, glabrous, laterally paired; anterior lobes elliptic *c.* 4.5 mm long, *c.* 2 mm wide, posterior lobes obovate-elliptic, *c.* 4.5 mm long, *c.* 2 mm wide. *Throat* white, appendages 6, subulate, each *c.* 0.5 mm long. *Labellum* boss green, ovate, *c.* 0.5 mm long, *c.* 0.3 mm wide; apical point reddish, subulate, *c.* 0.5 mm long; basal appendages reddish, aciculate, *c.* 1 mm long. *Gynostemium* 4.7–5.5 mm long, anthers maroon, vertical-paired, abaxial surface of anthers glabrous, pollen white; stigma orbicular, *c.* 0.3 mm diam., cushion-shaped. *Capsule* unknown. *Seeds* unknown. (Figure 15)

Other specimens examined. WESTERN AUSTRALIA: plains south of Stirling Range towards Kendenup, Oct. 1932, *R. Erickson s.n.* [Topotype label in J.H. Willis' handwriting] (NSW); on Knights Rd, Porongurup, 34° 36' 05" S, 117° 52' 17" E, 20 Oct. 1997, *A. Lowrie* 1949 (PERTH); on Woolgenilup Rd, Woolgenilup, 34° 33' 39" S, 117° 57' 15" E, 20 Oct. 1997, *A. Lowrie* 1960 [voucher for chromosome count of $n = 15$] (PERTH).

Distribution. Known only from the plains between the Porongurup Range and Stirling Range.

Habitat. Grows on loamy soils in low shrubland.

Flowering period. October to December.

Chromosome number. $n = 15$, S.H. James & A. Lowrie (previously unpublished data).

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority One. Now only known from two locations, Wooljinilup and Porongurup, both of which are currently not under threat. The imprecise location for the type 'plains between Kendenup and Mondurup Peak in the Stirling Range' has mostly been cleared for agriculture and attempted relocation of the species in this region by one of us (A.L.) has been unsuccessful.

Etymology. The epithet *diplectroglossum* is from the Greek *dis* – double, *plectron* – cock's spur and *glossa* – tongue, in reference to the long basal appendages and apical point of the labellum.

Affinities. Its closest relatives are *Styloidium repens* and *S. pingrupense*. *S. repens* differs in having many uni-flowered inflorescences per apical rosette and all corolla lobes of a different length. *S. pingrupense* differs in having leaves with entire hyaline margin and throat appendages 8.

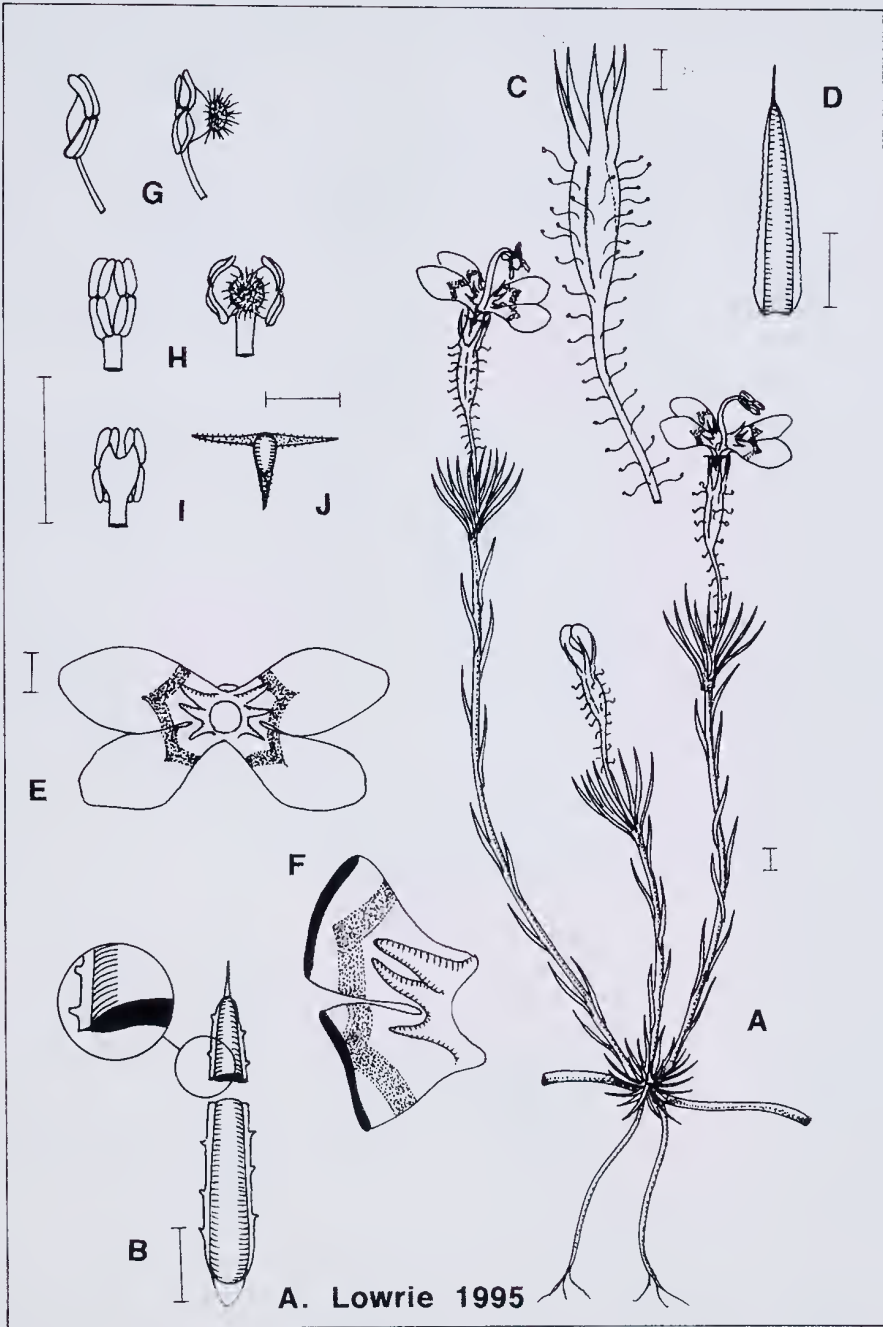


Figure 15. *Styliidium diplectroglossum* A- habit of flowering plant; B - leaf; C - hypanthium; D - sepal; E - corolla; F - throat appendages, enlarged; G - lateral view of gynostemium tip (with stigma at right); H - face view of gynostemium tip (with stigma grown out, right); I - back of gynostemium; J - labellum. Scale bar = 1 mm. Drawn from cultivated material, origin Knights Rd, Porongurup.

Notes. In live specimens of *Stylidium diplectroglossum* the compact apical leafy rosette can be seen to form an orderly 5-angled arrangement. That is, at each angle the leaves are precisely stacked upon each other with the oldest leaf on the outside and the youngest near the centre. This distinctive 5-angled arrangement is also found on the central juvenile leaf and stipule bud of *Drosera androsacea* Diels which occurs with *S. diplectroglossum*.

16. *Stylidium flagellum* Lowrie, Burbidge & Kenneally, *sp. nov.*

Stylidio repenti R. Br. affinis sed habito erecto vel semi-erecto ad 35 cm alto, foliis anguste lanceolatis, 5–9 mm longis, c. 1 mm latis, sepalis sub anthesi hypanthio longioribus, et acumine labelli minuto differt.

Typus: on Banovich Rd, off Jurien Bay road, west of Brand Highway, Western Australia, 30° 13' S, 115° 12' E, 26 April 1992, A. Lowrie 578 (*holo:* PERTH 05091276; *iso:* MEL).

Creeping perennial *herb*, elevated above the soil on long stilt roots and branched a little so as to form a small erect clump, stems between rosette nodes erect and semi-erect (not horizontal, spreading and mat-forming as in *Stylidium repens*). *Stems* between the rosette nodes leafless, flowering stems 5–15 cm long, arising in groups of 2 to 5 from the rosette node junctions, leaves absent along their length and terminating in a crowded spreading apical leafy rosette. *Leaves* narrowly lanceolate, 5–9 mm long, 0.8–1 mm wide at the base, apical mucro sharp, translucent white, 0.3–0.5 mm long, basal spur translucent white 0.3–0.5 mm long, hyaline margins white, irregularly serrate. *Inflorescence* uni-flowered, each apical rosette bearing up to 10 flowers, each produced in succession, hypanthium held above the terminal leafy rosette, peduncles red, 10–15 mm long, glandular; floral bracts and bracteoles hidden in the apical leafy rosette at the base of the peduncle, translucent white, scale-like, subulate, c. 2.5 mm long. *Hypanthium* obovate at anthesis, 1.5–2.5 mm long, 1–1.2 mm wide, glandular. *Sepals* 5, 3–3.5 mm long, forming 2-major lobes, one major lobe ovate, joined for two-thirds of its length from the base then divided into 3 subulate segments at the apex, the other major lobe joined for a third of its length from the base then divided into 2 subulate segments at the apex, each major lobe including the 5 divided segments bearing a marginal translucent white hyaline, glandular in the lower portions. *Corolla* white to various shades of pink with reddish purple marks near the base of the lobes, abaxial surface pinkish, glandular in the mid-vein area, laterally paired; each anterior and posterior petal on either side of the labellum of a similar length but each of the 4 petals always of a different width, anterior lobes ovate-elliptic, apex truncate and slightly erose, one lobe c. 5.5 mm long, c. 2.5 mm wide, the other lobe c. 4 mm long, 2.3 mm wide, posterior lobes obovate, apex truncate and slightly erose, one lobe c. 5.5 mm long, c. 2 mm wide, the other lobe c. 4 mm long, c. 1.5 mm wide. *Throat* appendages 6, white to various shades of pink, subulate. *Labellum* boss pale green, ovate, c. 0.8 mm long, c. 0.5 mm wide; apical point red, c. 0.2 mm long. *Gynostemium* linear-tapering, 6–6.5 mm long, anthers pale yellow, vertically paired, abaxial surface with translucent white moniliform hairs along the margins, pollen white; stigma elliptic, c. 0.6 mm diam., cushion-shaped. *Capsule* unknown. *Seeds* unknown. (Figure 16)

Other specimens examined. WESTERN AUSTRALIA: 0.5 km N of Hill River bridge, 30 Apr. 1970, T.E.H. Aplin 3136 (PERTH); 200 m N of turnoff to Cockleshell Gully from Jurien Bay road, 9 May 1974, A.H. Burbidge 1531 (PERTH); Cockleshell Gully, 20 Apr. 1975, A.H. Burbidge 1852 (PERTH); 2.8 km S of Mimegarra Road on Gingin–Eneabba road, 30 Apr. 1975, A.H. Burbidge 1859 [voucher for chromosome count of $n = 15$ (2 sheets)] (PERTH); about 15 km SW of Eneabba, 16 June 1975, A.H. Burbidge 1909 (PERTH); 200 m N of Hill River, on Brand Highway, 8 July 1975, A.H. Burbidge 1932A (PERTH); 7 miles [11.2 km] SE of Badgingarra, 23 Apr. 1976, A.H. Burbidge 2296 (PERTH);

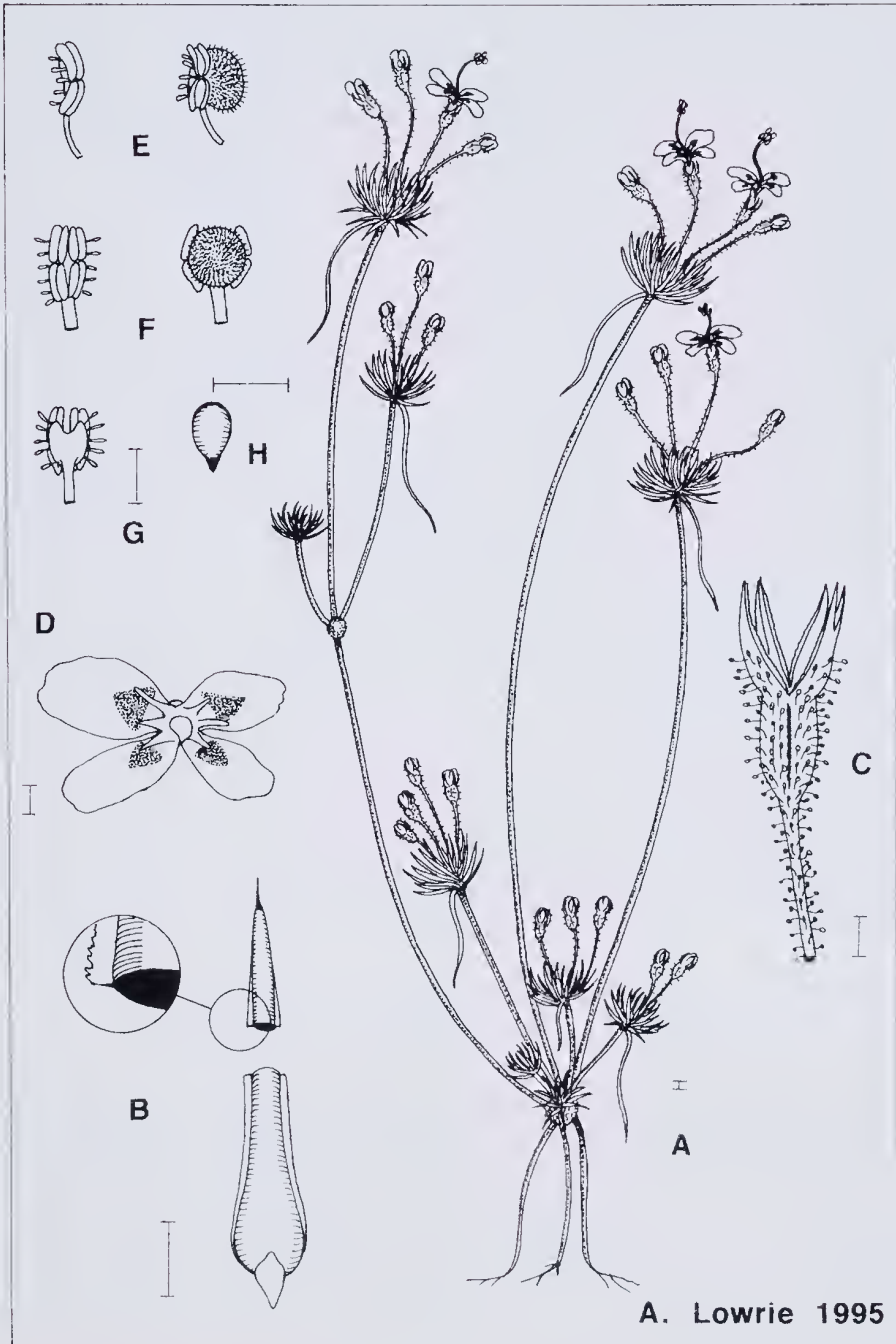


Figure 16. *Stylidium flagellum* A - habit of flowering plant; B - leaf; C - hypanthium; D - corolla; E - lateral view of gynostemium tip (with stigma at right); F - face view of gynostemium tip (with stigma grown out, right); G - back of gynostemium; H - labellum. Scale bar = 1 mm. Drawn from A. Lowrie 578 (PERTH).

junction Wongonderrah Rd & Brand Highway, 11 June 1988, *B.J. Keighery* 148 (PERTH); 15 km N of Cataby on Brand Highway, 26 Apr. 1992, *A. Lowrie* 577 (PERTH); Banovich Rd, Mt Lesueur, 12 May 1993, *A. Lowrie* 706 (PERTH).

Distribution. Widespread in the Badgingarra, Eneabba and Mt Lesueur region.

Habitat. Grows in white silica sand over laterite in low heathland, usually high in the landscape.

Flowering period. April to July.

Chromosome number. $n = 15$ (Burbidge & James 1991).

Conservation status. A common species and currently not under threat.

Etymology. The epithet, from the Latin *flagellum* – a naked whip-like runner, refers to the long, erect and semi-erect leafless stems between the rosette nodes and the leafy apical rosettes.

Affinities. Its closest relative is *Stylidium repens* which differs in having a horizontal, spreading and low to the ground growth habit; lanceolate leaves, 3–5 mm long; sepals shorter than the hypanthium at anthesis; and labellum with apical point almost as long as the boss.

Notes. *Stylidium flagellum* coexists with *S. repens* (*A. Lowrie* 578A) at the type location, apparently without hybridizing. Both species were flowering at the time of collection. *S. flagellum* only flowers in autumn and winter whereas *S. repens* can flower any month of the year and individual plants may flower twice each year (Erickson 1950).

17. *Stylidium pingrupense* Lowrie, Burbidge and Kenneally, *sp. nov.*

Stylidio repenti R. Br. affinis sed inflorescentia solitaria uni-flor a per rosettam foliosam terminalem, hypanthio glabro, lobis corollae in paribus equalibus, appendicibus faucis 8, et labello appendicibus basalibus ornato differt.

Typus: on road to Borden, c. 5 km from Hassell Highway, 34° 20' S, 118° 45' E, Western Australia, 20 October 1993, *A. Lowrie* 818 (*holo:* PERTH 05091357; *iso:* MEL).

Creeping perennial *herb*; elevated above the soil on stilt roots 1–1.5 cm long, irregularly branched to form a tangled matted network up to 100 cm diameter. *Stems* between the rosette nodes leafless 3–6 cm long, flowering stems 3–7 cm long arising from the rosette node junctions which often still retain a tuft of leaves, bearing persistent appressed leaves along their length and terminating in compact apical leafy rosette. *Leaves* linear, 8–10 mm long, 0.6–1 mm wide near the base, apical mucro sharp, translucent white, 0.2–0.4 mm long, basal spur translucent white, 0.3–0.5 mm long, hyaline margins translucent white, entire. *Inflorescence* solitary, uni-flowered, hypanthium mostly held above the terminal leafy rosette, peduncle 7–22 mm long, glandular; floral bracts and bracteoles absent. *Hypanthium* oblong at anthesis, 3.5–5.5 mm long, 0.7–1.2 mm wide, glabrous. *Sepals* 5, all free to the base, narrowly lanceolate, margins and sharp apical mucro translucent white, 2–2.5 mm long, glabrous. *Corolla* white or pink with reddish marks near the base of the lobes, abaxial surface a little glandular near the base, laterally paired; anterior lobes elliptic, c. 7 mm long, c. 3.5 mm wide, posterior lobes obovate, c. 7 mm long, c. 3 mm wide. *Throat* appendages 8, subulate, papillose, each opposite

pair of a different length in the range of 0.6–1.3 mm long. *Labellum* boss ovate, c. 0.5 mm long, c. 0.4 mm wide; apical point subulate, c. 1 mm long, glabrous; basal appendages acuminate, c. 0.8 mm long, papillose. *Gynostemium* 6–6.5 mm long, anthers vertical-paired, abaxial surface glabrous; stigma, c. 0.5 mm diam., cushion-shaped. *Capsule* unknown. *Seeds* unknown. (Figure 17)

Other specimens examined. WESTERN AUSTRALIA: 11.7 km E of road junction in Ongerup, 30 Oct. 1975, A.H. Burbidge 2251 (PERTH); Toompup Rd, 11.8 km from Laurier Rd (i.e. NE of Stirling Range), 19 Oct. 1976, A.H. Burbidge 2355 (PERTH); S of Gairdner River, 18 Aug. 1977, A.H. Burbidge s.n. (PERTH); 2 miles [3.2 km] E of Bremer Bay on track to West Mt Barren, Aug. 1975, D.J. Coates s.n. (PERTH); TV mast & Trig Hill, W of Jerramungup, Highway 1, 11 Oct. 1992, E.J. Croxford 6585 (ALBANY); W of Fitzgerald River, on road to Bremer Bay from Fitzgerald River, 31 Aug. 1975, D.J. Coates s.n. (2 sheets) (PERTH); W of vermin fence, Ravensthorpe Road, Sep. 1960, S.H. James 60.9/1.1 [voucher for chromosome count of $n = 30$] (PERTH); N of the Stirling Range, on Borden Road, 2.9 miles S of Cranbrook turnoff, Oct. 1971, S.H. James 71.10/91 (PERTH); c. 2 km S of Tieline Rd, c. 13 km NW of Ongerup, 23 Sep. 1989, A. Lowrie s.n. (PERTH); on Borden–Bremer Bay road, c. 3.9 km SE of Mungerup South Rd, c. 15 km SE of Borden, 20 Oct. 1993, A. Lowrie 822 (PERTH).

Distribution. Known from the region bordered by Bremer Bay, Borden, Ongerup, Pingrup and the Fitzgerald River.

Habitat. Grows in rocky loam, white clay soil, sandy laterite gravel or white sand in shrublands, usually with low mallee (*Eucalyptus* species).

Flowering period. September, October.

Chromosome number. $n = 30$ (Burbidge & James 1991).

Conservation status. A common species at known locations and currently not under threat.

Etymology. The epithet *pingrupense* is in reference to the area south of Pingrup where one of us (A. L.) first became aware of the species in the field.

Affinities. Its closest relative is *Stylidium diplectroglossum* which differs in having leaves with irregularly serrate hyaline margins, a glandular hypanthium, and 6 throat appendages.

It may be confused with *Stylidium repens* which differs in having mostly more than one 1-flowered peduncles per terminal leafy rosette, a glandular hypanthium, all corolla lobes of a different length, 6 throat appendages, 2 of which are minute, and no basal appendages on the labellum.

18. *Stylidium repens* R. Br. (Brown 1810: 571). – *Candollea repens* (R. Br.) F. Muell. (Mueller 1883: 86). *Type*: '(M.) v.v.' [King George Sound, Western Australia, December 1801, R. Brown 2637] (*lecto*: BM, here designated; *isolecto*: E, K, MEL 672618, NSW).

Stylidium radicans Sond. (Sonder 1845: 381). *Type*: 'In arenosis subumbrosis prope oppidulum Perth', [Western Australia], 16 June 1839, Preiss 2300 (*lecto*: MEL 672627, here designated; *isolecto*: MEL 672626 and 672628, LD [left side of sheet]; same locality and date, Preiss 2299 (*syn*: MEL 672625, 672629, 672628 [in clear packet], W [2 sheets], LD [right side of sheet]); King George's Sound, [Western Australia], Hügel, (*syn*: W); Swan-River. [Western Australia], Capt. Mangles (*syn*: n.v.).

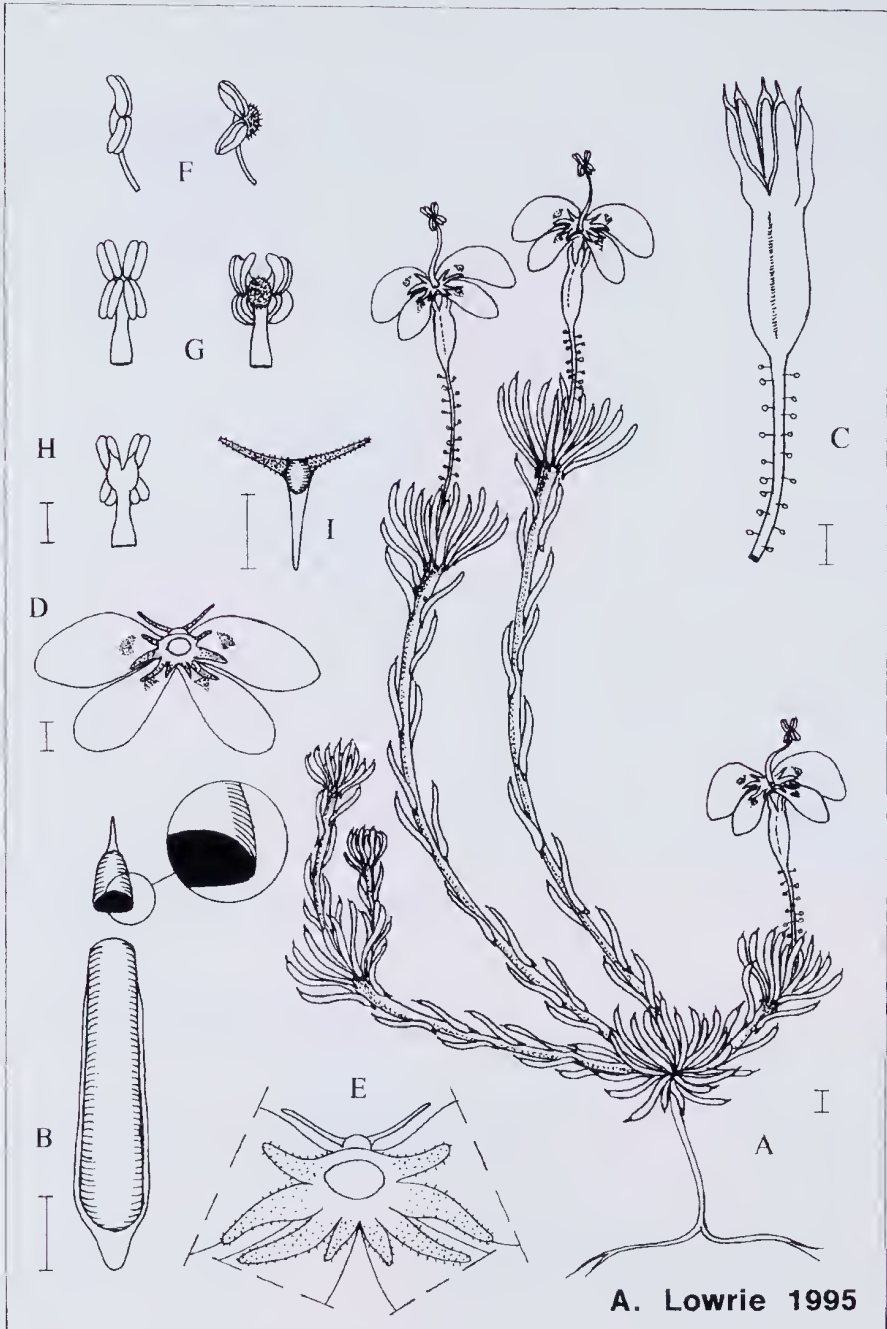


Figure 17. *Styliidium pingrupense* A - habit of flowering plant; B - leaf; C - hypanthium; D - corolla; E - throat appendages, enlarged; F - lateral view of gynostemium tip (with stigma at right); G - face view of gynostemium tip (with stigma grown out, right); H - back of gynostemium; I - labellum. Scale bar = 1 mm. Drawn from A. Lowrie *s.n.* 23 Sep. 1989 (PERTH).

Illustrations. Erickson (1958) colour plate 16, figure 3; page 72, plate 17, figures 1–8. Grieve & Blackall (1982) page 762, n. 93. Mildbraed (1908) page 49, figure 15, A–E.

Small creeping perennial *herb*; elevated above the soil on short stilt roots and irregularly branched to form a tangled matted network up to c. 200 cm diameter. *Stems* between the rosette nodes leafless, flowering stems 1–8 cm long arising from the rosette node junctions, often bearing persistent appressed leaves along their length and terminating in compact apical leafy rosettes. *Leaves* lanceolate, 3–6 mm long, 0.6–0.8 mm wide near the base, apical mucro sharp, translucent white 0.2–0.3 mm long, basal spur translucent white 0.4–0.8 mm long, hyaline margins white, irregularly minutely serrate, gradually reducing in width from the base towards the apex. *Inflorescences* 1–3 but mostly more than 1 if favourable growing conditions persist, each peduncle uni-flowered, 10–20 mm long, densely glandular; floral bracts and bracteoles subulate, hyaline margins translucent-white, minutely irregularly serrate, c. 1.5 mm long, hidden within the apical leafy rosettes. *Hypanthium* ellipsoid at anthesis, 1.7–3 mm long, 0.8–1.5 mm wide, 8-shaped in section, densely glandular. *Sepals* 5, fused almost to the apex, 1.3–1.7 mm long, arranged in groups of 2 and 3 to form 2 lips, hyaline margins translucent white, minutely irregularly serrate, glabrous. *Corolla* white with reddish marks near the base of the lobes, abaxial surface white, pinkish red along the middle, glandular, laterally paired, all lobes of a different length, anterior lobes obovate-elliptic, c. 5 mm long, c. 2.5 mm wide, and c. 3.5 mm long, c. 2 mm wide, the larger of the posterior lobes elliptic, c. 4.5 mm long, c. 1.5 mm wide, the smaller lobe obovate, c. 3 mm long, c. 1.5 mm wide. *Throat appendages* 6, white, papillose, larger 4 in 2 pairs, each pair forming a boomerang-shape, 1 pair c. 1 mm long, the other c. 0.5 mm long, remaining 2 appendages minute, conical. *Labellum* attached below the sinus, boss narrowly ovate, c. 0.6 mm long, c. 0.3 mm wide; apical point subulate in outline, c. 0.5 mm long. *Gynostemium* linear-tapering 4.5–6 mm long, anthers black, vertically paired, abaxial surface bearing minute transparent white, clavate, moniliform hairs along the margins, pollen white; stigma elliptic, c. 0.8 mm long, c. 0.5 mm wide, cushion-shaped. *Capsule* ellipsoid, 2.5–3 mm long, 1.2–1.5 wide. *Seeds* brown, ovoid, 0.45–0.5 mm long, 0.45–0.5 mm diam., minutely papillate. (Figure 18)

Other specimens examined. WESTERN AUSTRALIA: c. 25 miles [40 km] W of Mullewa on road to Geraldton, 7 May 1974, A.H. Burbidge 1503 (2 sheets) (PERTH); 370 mile [592 km] peg, N of Northampton, 7 May 1974, A.H. Burbidge 1511 (PERTH); Hale Rd, Forrestfield, 22 June 1974, A.H. Burbidge 1582 (PERTH); 13 km S of Grass Patch, 9 Oct. 1974, A. H. Burbidge 1733 (PERTH); Lucky Bay, E of Esperance, 16 May 1975, A.H. Burbidge 1890 (PERTH); Darling Scarp, near top of Crystal Brook Rd, 4 July 1975, A.H. Burbidge 1923 (PERTH); 18 km N of Eneabba, 16 June 1975, A.H. Burbidge 1910 (PERTH); 13 km S of Mt Ridley (approx. NE of Esperance), 26 Oct. 1975, A.H. Burbidge 2215 (PERTH); c. 34 km W of Esperance at Dalyup West, 30 Oct. 1975, A.H. Burbidge 2239 (PERTH); N of Gnowangerup, turnoff to Pingrup, 28 Aug. 1975, D.J. Coates (PERTH); Youngs Siding, c. 1951, R. Erickson *s.n.* (PERTH); Scott River sandplain, 18 Apr. 1976, S.D. Hopper *s.n.* (PERTH); Mt Yokine, near TV studios, Oct. 1965, S.H. James 65.10/60 [voucher for chromosome count of $n = 15$ (2 sheets)] (PERTH); Watheroo Rd, 1 km E of Brand Highway, 27 Oct. 1989, A. Lowrie *s.n.* (PERTH); turn off to Hellfire Bay, Cape Le Grande, 8 Dec. 1990, A. Lowrie 228 B (PERTH); Boyanup Rd West, 3.6 km W of the junction of Railway and Trigwell roads, N of Capel, 1 Nov. 1991, A. Lowrie 461 (PERTH); c. 1 km from ocean, Castle Rock Bay, Meelup, S of Busselton, 2 Nov. 1991, A. Lowrie 480 (PERTH); Marine Drive, S face of Mt Clarence, Albany, 27 Nov. 1991, A. Lowrie 543 (PERTH); Banovich Rd off Jurien Bay road, W of Brand Highway, 26 Apr. 1992, A. Lowrie 578A (PERTH); 3.2 km N of Wongan Hills, 13 Sep. 1996, A. Lowrie 1544 (PERTH); Camp Quairanup, near Albany, 8 Jan. 1977, B.L. Rye (PERTH).

Distribution. Widespread throughout the south-west region of Western Australia from Kalbarri in the north to Esperance in the south-east.

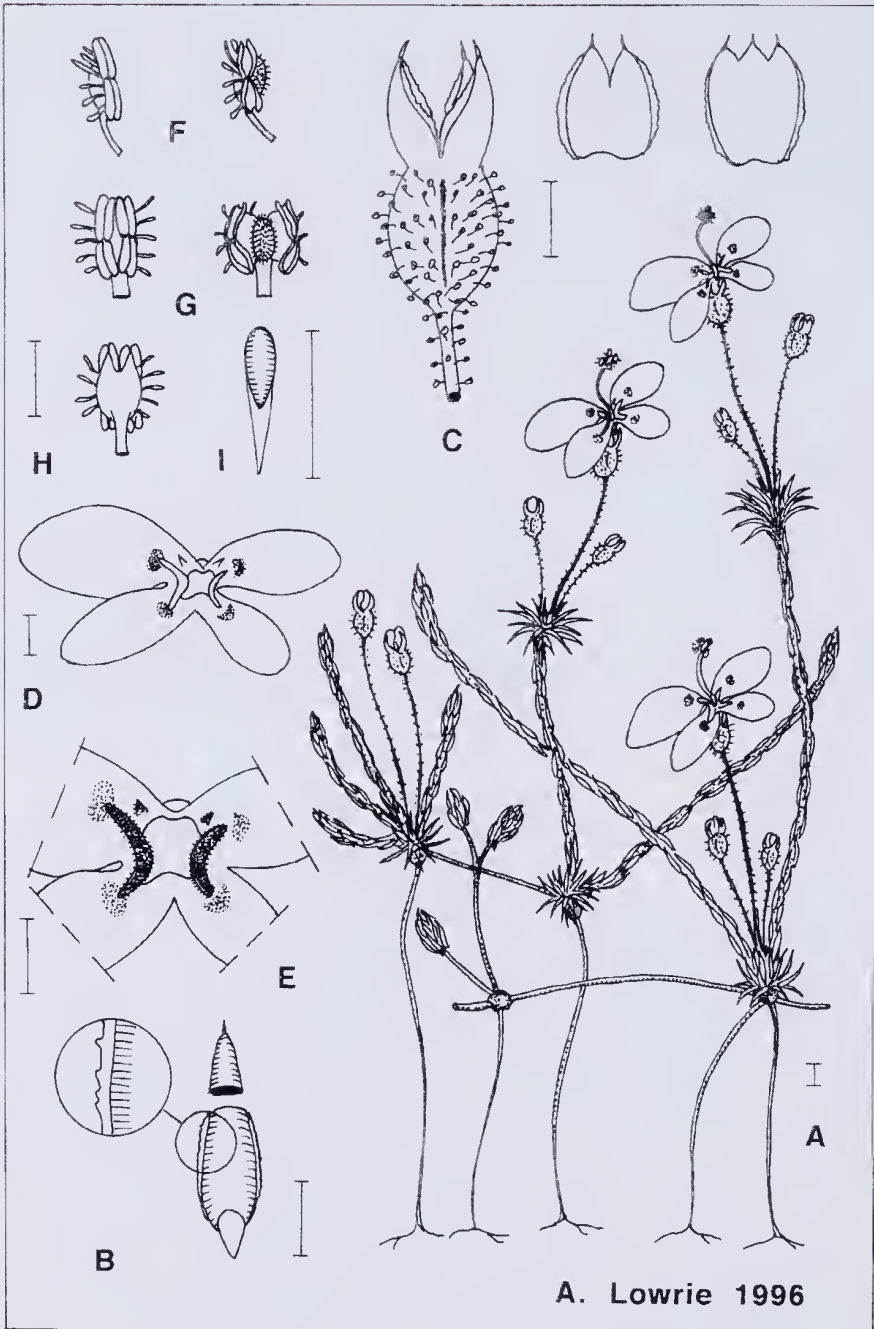


Figure 18. *Styliidium repens* A - habit of flowering plant; B - leaf; C - hypanthium with illustration of the 2 & 3 fused sepals lips right; D - corolla; E - throat appendages, enlarged; F - lateral view of gynostemium tip (with stigma at right); G - face view of gynostemium tip (with stigma grown out, right); H - back of gynostemium; I - labellum. Scale bar = 1 mm. Drawn from A. Lowrie 1544 (PERTH).

Habitat. Grows in white, grey or yellow sand in open forest, swamp margins and heathland.

Flowering period. Any month of the year. Individual plants may flower twice in the same year (Erickson 1950).

Chromosome number. $n = 15$ (Burbidge & James 1991).

Conservation status. A common and widespread species and currently not under threat.

Etymology. The epithet *repens* – prostrate and crawling, is from the Latin and refers to the creeping growth habit of the species.

Affinities. Its closest relative is *Stylidium flagellum* which differs by having an erect or semi-erect growth habit up to 35 cm tall, narrowly lanceolate leaves 5–9 mm long, sepals longer than the hypanthium at anthesis, and a labellum with a very small apical point.

Stylidium repens may be confused with *S. pingrupense* and *S. diplectroglossum* which differ in having a solitary uni-flowered inflorescence per terminal leafy rosette, corolla lobes in equal length pairs, and a labellum with basal appendages.

Notes. We have selected the sheet housed at BM as the lectotype for *Stylidium repens*, because it is complete material of a Robert Brown collection. The MEL 672627 sheet has been selected for the lectotype of *S. radicans* because the sheet has Herb. W. Sonder label and has also been previously examined [top left corner of label folded forward and bearing the letter B] by Bentham for his “Flora Australiensis”.

A variant with a twisted column, unusually shaped petals and a chromosome number $2n = 30$ has been found on the Coorow–Greenhead Road. It may prove to be a separate species.

19. *Stylidium pseudosacculatum* Lowrie, Burbidge & Kenneally, *sp. nov.*

Stylidio sacculato R. Erickson & J.H. Willis affinis sed pedicellis ultra rosettam foliosam terminalem extensis, appendicibus faucis 6, labello appendicibus basalibus ornato differt.

Typus: on Great Eastern Highway 3.2 km west of Tammin, Western Australia, 31° 38' S, 117° 29' E, 16 October 1990, A. Lowrie 112 (*holo:* PERTH 5091284; *iso:* MEL).

Illustrations. Carlquist (1969) page 33, figure 34 [black & white photograph]. Grieve & Blackall (1982) page 762, n. 93b.

Creeping perennial *herb*; elevated above the soil on stilt roots 2–3 cm long and irregularly branched so as to form a tangled matted network up to 45 cm diam. *Stems* between the rosette nodes leafless 4.5–6.5 cm long, flowering stems 2–12 cm long arising as well as spreading from the rosette node junctions, bearing persistent appressed leaves along their length and terminating in compact apical leafy rosette. *Leaves* lanceolate-lageniform, 3.5–5 mm long, 0.8–1 mm wide near the base, 0.3–0.4 mm wide near the apex, apical mucro sharp, translucent white, 0.3–0.4 mm long, basal spur translucent white, 0.4–0.8 mm long, hyaline margins translucent white, serrulate. *Inflorescence* solitary, uni-flowered, hypanthium held on peduncle 3–5 mm above the terminal leafy rosette,

peduncle pilose within the terminal leafy rosette, densely glandular above; without visible floral bracts and bracteoles. *Hypanthium* oblong at anthesis, 2.7–3.5 mm long, 1–1.2 mm wide, sparsely glandular or pilose. *Sepals* 5, all free to the base, narrowly lanceolate, margins translucent white, 2–2.5 mm long, glabrous. *Corolla* white blushed pink with reddish marks near the base of the lobes, abaxial surface white, pinkish along the middle, shortly glandular all over, laterally paired, anterior lobes elliptic, c. 6 mm long, c. 2 mm wide, posterior lobes elliptic, c. 6 mm long, c. 2 mm wide. *Throat* green, appendages 6, white, subulate, 4 opposite, in pairs of c. 0.5 mm and c. 1 mm long at the base of the anterior petal lobes, 2 opposite, both c. 0.5 mm long at the base of the posterior lobes. *Labellum* boss green, ovate, c. 0.7 mm long, c. 0.5 mm wide; apical point reddish, triangular in outline, c. 1 mm long, margins glandular; basal appendages white, acicular, c. 1 mm long. *Gynostemium* strap-like, 5–5.5 mm long, hinged below the anthers, with a dilated cunabulum above the sensitive torus, abaxial surface glabrous, anthers vertically paired, abaxial surface of anthers bearing a few small transparent white moniliform hairs; stigma round, c. 0.4 mm diam., cushion-shaped. *Capsule* unknown. *Seeds* unknown. (Figure 19)

Other specimens examined. WESTERN AUSTRALIA: on Great Eastern Highway, 3 km W of Tammin 3 Aug. 1974, A.H. Burbidge 1691 [voucher for chromosome count of $n = c. 30$] (PERTH); 12 miles [19.2 km] NW of Wickiepin on road to Pingelly, 8 Oct. 1974, A.H. Burbidge 1720 (2 sheets) (PERTH); 2 miles [3.2 km] W of Tammin, 5 Oct. 1975, A.H. Burbidge 2132 (PERTH); 18.5 km W of Corrigin, 23 Oct. 1974, A.H. Burbidge 1770 (PERTH); 18 km from Wickiepin on road to Pingelly, 25 Oct. 1974, A.H. Burbidge 1789, 1790, 1791 (2 sheets) (PERTH); 29.7 km W of Corrigin, near a parking bay, 6 Oct. 1976, A.H. Burbidge 2329A (PERTH); Charles Gardner Reserve, S of Tammin, 8 Nov., no year date, A.H. Burbidge s.n. (PERTH); 39 miles [62.4 km] E of Brookton on road to Corrigin, 8 Oct. 1967, S. Carlquist 3693 (PERTH); about 110 miles [176 km] E of Perth on Great Eastern Highway, Oct. 1972, S.H. James 72.10/2 (PERTH); 2 miles [3.2 km] W of Tammin, 9 Nov. 1974, G.J. Keighery 342 (PERTH); Wallaby Hills Reserve on Goldfields Rd, E of York, 12 Oct. 1991, A. Lowrie 391 (PERTH); 17 km W of Wickiepin, 21 Oct. 1972, E. Wittwer 876 (PERTH).

Distribution. Known from scattered locations in the region bordered by Wickiepin in the south; c. 120 km north-west to York; c. 80 km north-east to Tammin; c. 85 km south-east to Corrigin; and c. 60 km south-west back to Wickiepin.

Habitat. Grows in white sandy soil over laterite or loamy sand amongst an alluvium of scattered granite rocks.

Flowering period. September, October.

Chromosome number. $n = c. 30$ (Burbidge & James 1991).

Conservation status. The type population west of Tammin, situated on the margins of a gravel pit and road material dump, is small and currently under threat. The taxon as a whole does not appear to be under threat.

Etymology. The epithet *pseudosacculatum* is from the Latin *pseudo* – false, in reference to this species not being *Styldium sacculatum* and *sacculatum* – pouched, in reference to the dilated gynostemium portion (now known as the cunabulum (Kenneally & Lowrie 1994b) situated immediately below the anthers where the anthers or stigma hinge forward to be cradled on the cunabulum while at rest in the set position.

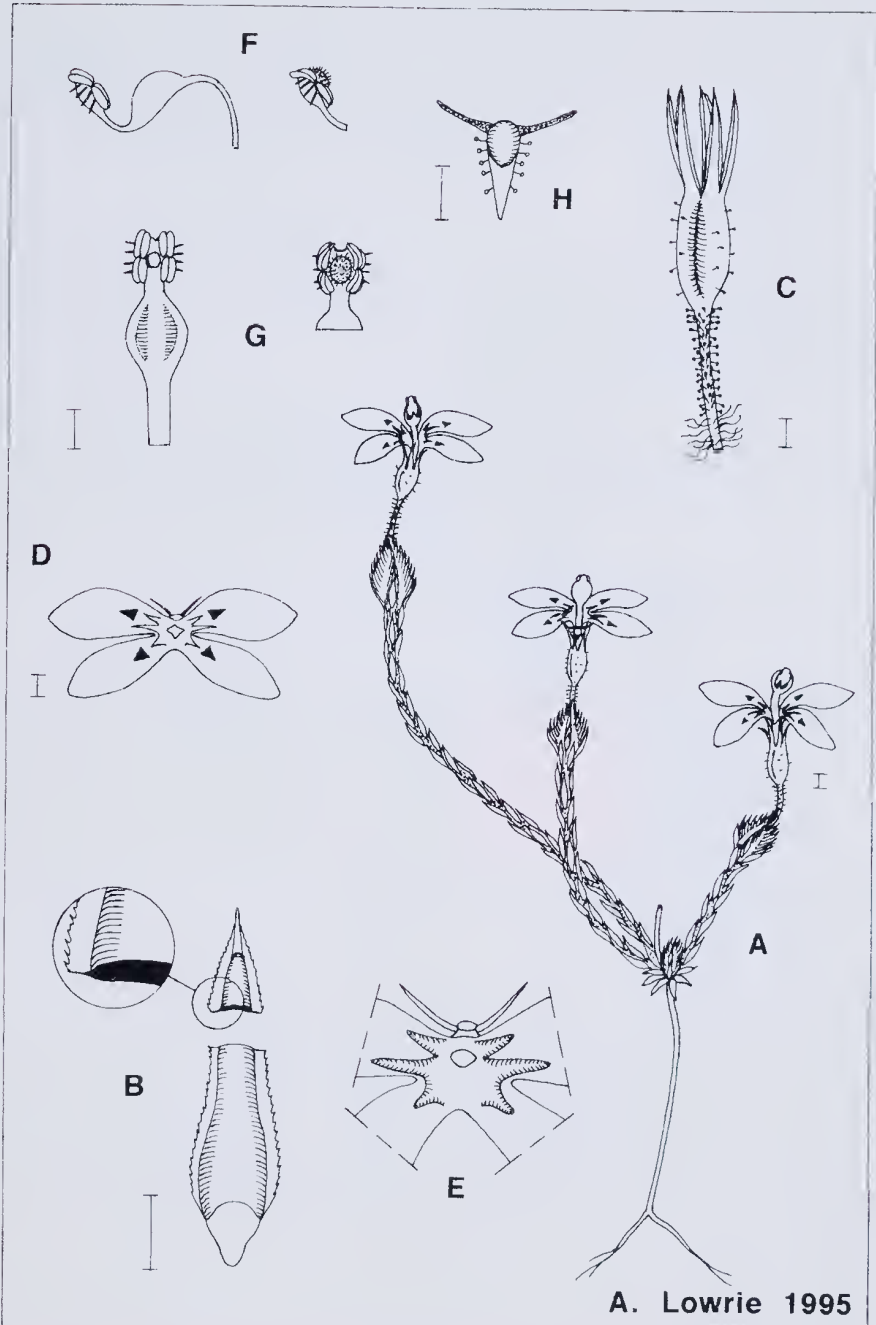


Figure 19. *Styliidium pseudosacculatum* A – habit of flowering plant; B – leaf; C – hypanthium; D – corolla; E – throat appendages, enlarged; F – lateral view of gynostemium column (and gynostemium tip with stigma at right); G – face view of gynostemium column showing the dilated cunabulum below the anthers (and gynostemium tip with stigma grown out, right); H – labellum. Scale bar = 1 mm. Drawn from A. Lowrie 112 (PERTH).

Affinities. Its closest relative is *Stylidium sacculatum* which differs in having the peduncle and basal half of the hypanthium enclosed within the terminal leafy rosette, 4 throat appendages, no basal appendages on the labellum, and the abaxial surface of the gynostemium glandular.

Notes. *Stylidium pseudosacculatum* was previously treated as a hybrid between *S. sacculatum* and *S. diplectroglossum*, both of which have been treated as varieties of *S. repens*. The widened gynostemium cunabulum and the labellum with filiform basal appendages of this taxon were considered by Carlquist (1969) to be characters probably based on a few genes which may characterize some populations and not others.

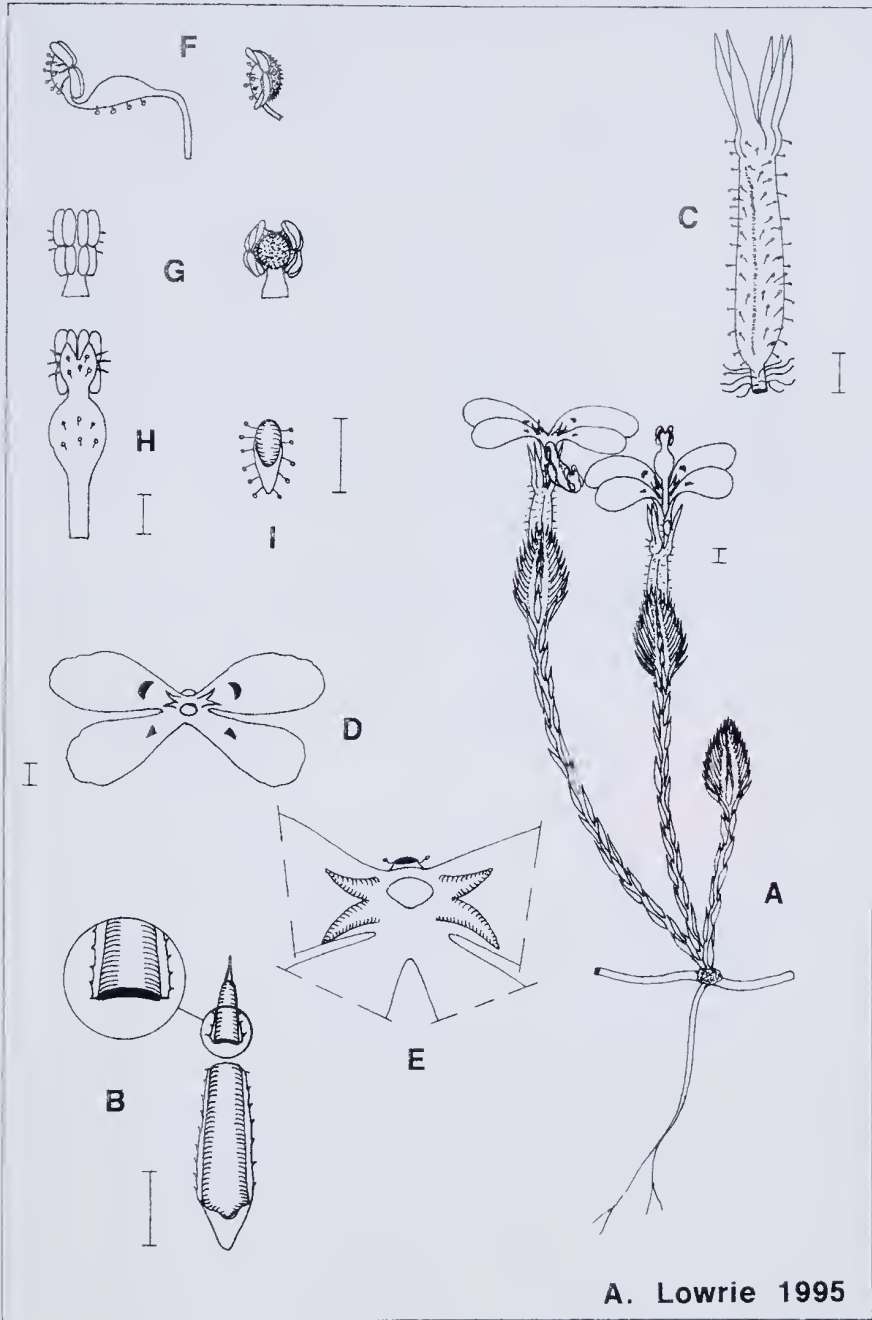
Stylidium pseudosacculatum is not a hybrid. It is known to coexist with the widespread and common *S. repens* but never with *S. sacculatum*, which occurs north of its range. *S. pseudosacculatum* is consistent in its major morphological characters, although its inflorescence indumentum is variable. For example specimens from the type location have a sparsely glandular hypanthium and those from the Wallaby Hills district have a pilose hypanthium.

20. *Stylidium sacculatum* R. Erickson & J.H. Willis (Erickson & Willis 1956: 13). – *S. repens* var. *sacculatum* (R. Erickson & J.H. Willis) Carlquist (Carlquist 1969: 32). *Type:* Piawaning, Western Australia, 7 October 1952, R. Erickson s.n. (*holo:* MEL; *iso:* K, PERTH 1642065).

Illustrations. Carlquist (1969) page 33, figure 33 [black & white photograph]. Erickson (1958) colour plate 16, figure 1; page 72, plate 17, figures 17–25.

Creeping perennial *herb*; elevated above the soil on stilt roots 2.5–3 cm long and irregularly branched so as to form a tangled matted network up to 45 cm diam. *Stems* between the rosette nodes leafless 1.5–2 cm long, flowering stems 2–8 cm long arising from the rosette node junctions which often still retain a tuft of leaves, bearing persistent appressed leaves along their length and terminating in compact apical leafy rosette. *Leaves* lanceolate, 3–4 mm long, 0.6–0.9 mm wide near the base, 0.3–0.4 mm wide near the apex, apical mucro sharp, translucent white, 0.2–0.4 mm long, basal spur translucent white, 0.5–0.8 mm long, hyaline margins translucent white, serrate. *Inflorescence* solitary, uni-flowered, hypanthium mostly held for half its length within the terminal leafy rosette, peduncle c. 1 mm long, pilose; without visible floral bracts and bracteoles. *Hypanthium* linear-oblong at anthesis, 6–7.5 mm long, 0.6–1 mm wide, finely glandular. *Sepals* 5, all free to the base, narrowly lanceolate, margins translucent white, 2.5–4 mm long, glabrous. *Corolla* white blushed pink with purple marks near the base of the lobes, abaxial surface white and finely glandular along the middle, laterally paired; anterior lobes obovate c. 6 mm long, c. 3 mm wide, posterior lobes obovate, c. 6 mm long, c. 3 mm wide. *Throat* appendages 4, white blushed pink, subulate, in opposite pairs at the base of the anterior petal lobes. *Labellum* boss ovate, c. 0.5 mm long, c. 0.5 mm wide; apical point triangular in outline, c. 0.5 mm long, margins glandular; basal appendages absent. *Gynostemium* strap-like, 5–6 mm long, hinged below the anthers, with a dilated cunabulum above the sensitive torosus, abaxial surface a little glandular, anthers yellow, vertically paired, abaxial surface bearing small transparent white moniliform hairs and a few glands, pollen white; stigma cushion-shaped. *Capsule* unknown. *Seeds* unknown. (Figure 20)

Other specimens examined. WESTERN AUSTRALIA: 13.9 km W of Wongan Hills on road to Calingiri, 20 Oct. 1975, A.H. Burbidge 2183 [2 sheets] (PERTH); Bolgart, Oct. 1949, R. Erickson s.n. (NSW); Bolgart 40 km N of Toodyay (NE of Perth), Oct. 1952, R. Erickson s.n. (PERTH); 10.6 miles [16.9 km] W of Wongan Hills on road to Calingiri, Oct. 1973, S.H. James 73.10/24 (PERTH); on Bindoon–Moora road, 0.6 km S of Gillingarra, 20 Oct. 1989, A. Lowrie s.n. (PERTH); Calingiri township at turn off to cemetery on Calingiri–Wongan Hills road, 27 Oct. 1990, A. Lowrie 141 (PERTH).



A. Lowrie 1995

Figure 20. *Styliidium sacculatum* A – habit of flowering plant; B – leaf; C – hypanthium; D – corolla; E – throat appendages, enlarged; F – lateral view of gynostemium column (and gynostemium tip with stigma at right); G – face view of gynostemium tip (with stigma grown out right); H – abaxial view of gynostemium column showing the dilated cunabulum below the anthers; I – labellum. Scale bar = 1 mm. Drawn from A. Lowrie 141 (PERTH).

Distribution. Known from scattered locations in the region bordered by Bolgart in the south; c. 60 km north-west to Gillingarra; c. 40 km north-east to Piawaning; c. 35 km east to Wongan Hills; and c. 45 km south-west back to Bolgart.

Habitat. Grows in white sand.

Flowering period. October, November.

Chromosome number. Unknown.

Conservation status. Locally abundant and currently not under threat.

Etymology. The epithet *sacculatum* from the diminutive of the Latin *saccatum* – pouched in reference to the cunabulum immediately below the hinged portion at the base of anthers.

Affinities. Its closest relative is *Stylidium pseudosacculatum* which differs in having peduncles extending beyond the terminal leafy rosette, 6 throat appendages, a labellum with basal appendages, and the abaxial surface of the gynostemium glabrous.

21. *Stylidium choreanthum* R. Erickson & J.H. Willis (Erickson & Willis 1956: 171). *Type:* by the roadside along Great Eastern Highway, east of Southern Cross and probably between Boorabbin and No. 7 Pumping Station, Western Australia, October 1955, Mrs J.A. Wollard s.n. (*holo:* MEL; *iso:* K, PERTH).

Illustrations. Carlquist (1969) page 33, figure 35 [black & white photograph]. Erickson (1958) page 78, plate 19, figures 1–9. Grieve & Blackall (1982) page 760, n. 88; photograph, colour plate XI, top left.

Creeping perennial *herb*; elevated above the soil on short stilt roots and irregularly branched to form a tangled matted network up to 30 cm diam. *Stems* between the rosette nodes leafless, flowering stems 1–6 cm long arising from the internode junctions, bearing persistent appressed leaves along their length in the upper portions and terminating in compact apical leafy rosette. *Leaves* lanceolate, 2–3 mm long, 0.5–0.7 mm wide near the base, 0.3–0.4 mm wide near the apex, apical mucro translucent white, 0.2–0.3 mm long, sharp, basal spur translucent white 0.5–0.7 mm long, hyaline margins white with irregular spike-like teeth gradually reducing in length from the base towards the apex. *Inflorescence* 2–5-flowered, 10–15 mm long, densely glandular; pedicels 1–2 mm long; floral bracts lanceolate, 1.5–2.5 mm long; bracteoles lanceolate, 1–1.5 mm long. *Hypanthium* obovoid at anthesis, 2–3 mm long, 0.9–1.3 mm wide, densely glandular. *Sepals* 5, all free to the base, ovate, margins and apex irregularly serrate, 3 sepals 1.5–2.5 mm long, 2 sepals 1–1.7 mm long, sparsely glandular. *Corolla* pale pink fading to white with reddish marks near the base of the lobes, abaxial surface pinkish and a little glandular along the middle, vertically paired; anterior lobes oblong-falcate, slightly tapering, c. 5 mm long, c. 1 mm wide, posterior lobes spatulate-flabellate, c. 5 mm long, c. 4.5 mm wide, flabellate portion c. 2.5 mm long, apex crenate. *Throat* appendages green, ridge-like on petal base folds. *Labellum* boss narrowly ovate, yellow, c. 0.5 mm long, c. 0.3 mm wide; apical point reddish, subulate in outline, c. 0.6 mm long. *Gynostemium* linear-tapering, 4.5–6 mm long, anthers grey, diagonally-paired, abaxial surface of anthers bearing minute transparent white moniliform hairs, pollen grey; stigma pale green, cushion-shaped. *Capsule* unknown. *Seeds* unknown. (Figure 21)

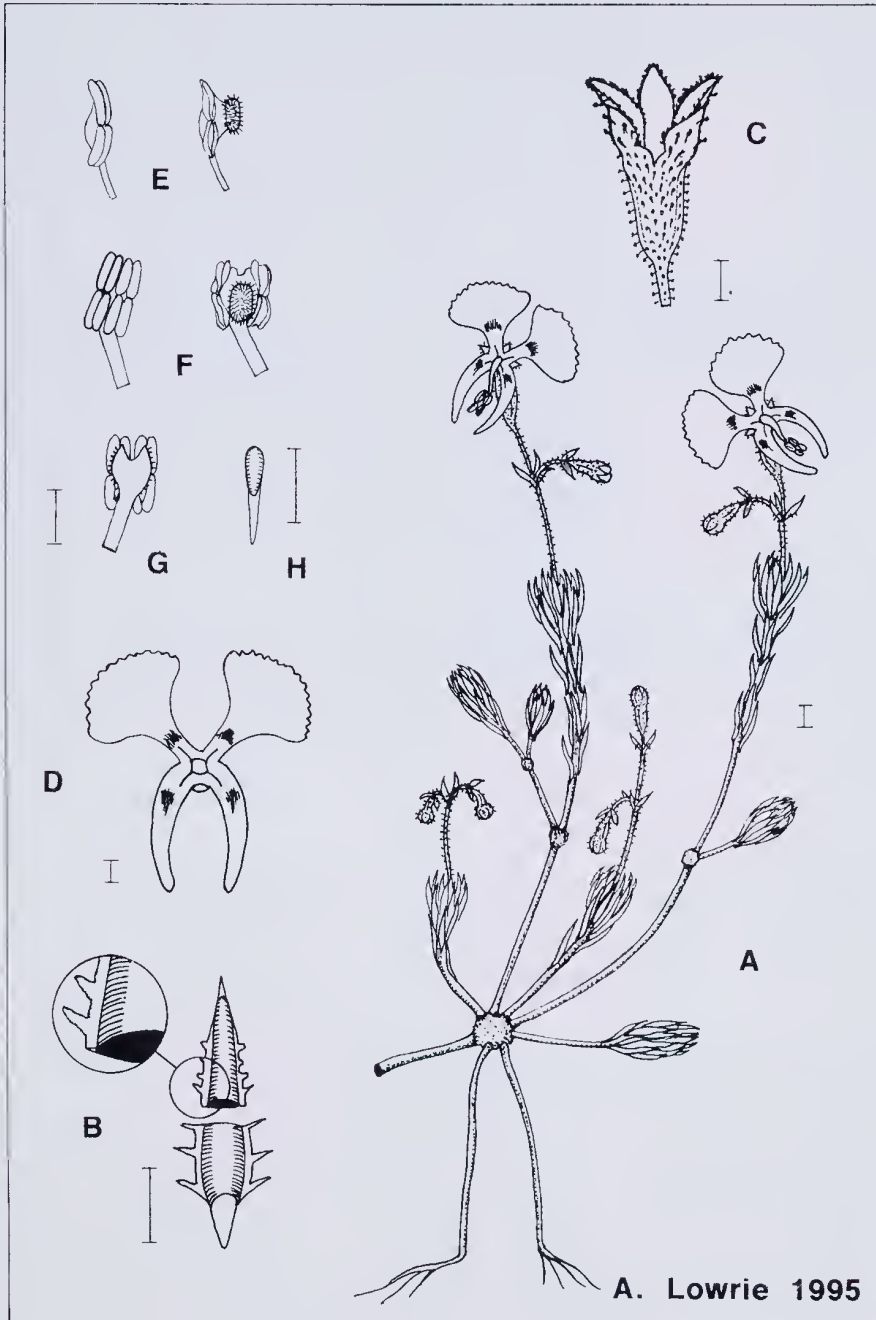


Figure 21. *Stylidium choreanthum* A – habit of flowering plant; B – leaf; C – hypanthium; D – corolla; E – lateral view of gynostemium tip (with stigma at right); F – face view of gynostemium tip (with stigma grown out, right); G – back of gynostemium; H – labellum. Scale bar = 1 mm. Drawn from A. Lowrie s.n. 1 Oct. 1989 (PERTH).

Other specimens examined. WESTERN AUSTRALIA: near Southern Cross, Sep. 1929, *W.E. Blackall s.n.* (PERTH); 9.7 km N of Southern Cross, 16 July 1975, *A.H. Burbidge* 1958 (PERTH); 2 km S of Queen Victoria Rock, 2 Sep. 1975, *A.H. Burbidge* 2048 (PERTH); 9.7 km N of Southern Cross, 6 Oct. 1977, *A.H. Burbidge* 2524 (2 sheets) (PERTH); 1/4 mile [0.4 km] E of Ghooli (E of Southern Cross), 7 Oct. 1967, *S. Carlquist* 3670 (PERTH, NSW [B & W photo of flowers attached to second sheet]); 27 miles [43.2 km] S of Coolgardie, 3 Oct. 1961, *J.H. Willis s.n.* (PERTH); 16.5 km NE of Bungalbin Hill, 2 Oct. 1991, *R.J. Cranfield* 8142 (PERTH); 10 km NNE of access track to hill E of Bungalbin Hill, 8 Sep. 1989, *R.J. Cranfield & P.J. Spencer* 7775 (PERTH); 54 km W of turn off from Norseman–Esperance Rd on track to Hyden, 11 Nov. 1994, *D.J. Edinger* 931 (PERTH); 49 miles [78.4 km] S of Bullfinch on road to Jackson, Oct. 1972, *S.H. James* 72.10/13 (PERTH); Yellowdine, Great Eastern Hwy, at turnoff to Marvel Loch, Oct. 1972, *S.H. James* 72.10/11 (2 sheets) (PERTH); 10 km N of Southern Cross on Southern Cross–Bullfinch road, 1 Oct. 1989, *A. Lowrie s.n.* (PERTH); Helena and Aurora Range, Hunt Range track 10.97–12.95 km NE of Y-junction located 6 km NE of Bungalbin Hill trig, 20 Oct. 1990, *F.H. & M.P. Mollemans* 3762 (PERTH); Condarnin Rock Nature Reserve, Yellowdine–Neroma road, 1.9 km S of the Great Eastern Highway and 20 km E of the road, 16 Oct. 1990, *F.H. & M.P. Mollemans* 3688 (PERTH);); 2 km W of Yackee Yackine dam c. 70 km NNW of Bullfinch, 3 Oct. 1981, *K. Newbey* 9287 (PERTH); 10 miles [16 km] S of Moorine Rock, 20 Oct. 1974, *L. Pitt* (PERTH); NE of Bungalbin on dogger’s track 30° 17' 47" S, 119° 44' 31" E, 18 Sep. 1991, *B.H. Smith* 1531 (PERTH); 10 km N of Southern Cross along road to Bullfinch, 3 Oct. 1979, *J. Taylor* 1092, *M.D. Crisp & R. Jackson* (PERTH); Eyre Highway, 27 miles [43.2 km] S of Coolgardie, 3 Oct. 1961, *J.H. Willis s.n.* [note in Willis’ hand ‘The 2nd known locality for species (TYPE was from near Boorabin)’] (NSW).

Distribution. Known from scattered locations along a line from Bungalbin Hill in the north; c. 80 km south-west to Southern Cross; c. 180 km east to c. 30 km south of Coolgardie near Queen Victoria Rocks; and c. 150 km south to c. 30 km north-west of Peak Charles.

Habitat. Grows in yellow sand in dry shrublands.

Flowering period. September to November.

Chromosome number. $n = 15$ [18.5 km E of Southern Cross] (Burbidge & James 1991).

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Two.

Etymology. The epithet *choreanthum* from the Greek *choreia* – a choral dance and *anthos* – flower in reference to this species common name of Dancing Triggerplant.

Affinities. *Styliidium choreanthum* is distinguished from all other creeping triggerplants by having vertically paired corolla lobes.

Notes. *Styliidium choreanthum* commonly coexists with *S. arenicola* Carlquist, *S. limbatum* F. Muell. and *S. yilgarnense* E. Pritz. in the Southern Cross region.

22. *Styliidium tepperianum* (F. Muell.) Mildbr. (Mildbraed 1908: 69). – *Candollea tepperiana* F. Muell. (Mueller 1887: 15). *Type:* on Mount Taylor, Kangaroo Island, [South Australia], 12 November 1886, *O. Tepper* (lecto: MEL 716062, here designated; *isolecto:* *leg. Tepper* 15.11.1886, Herb. GOET).

Creeping perennial *herb*; elevated above the soil on stilt roots 1–1.5 cm long, leafy basal rosettes compact, with erect and branching stems bearing additional compact leafy rosettes arising from the preceding leafy rosettes, 4–8 cm tall, stems between rosettes sparsely leaved or leafless, 1–2 cm long. *Leaves* linear-lanceolate, 4.5–10 mm long, 0.4–0.6 mm wide, apical mucro sharp, translucent white, 0.3–0.5 mm long, margins with ciliate spines, 0.1–0.3 mm long. *Inflorescence* 3–14 cm long including the peduncle, forming a 1-sided raceme, 1–6-flowered, sparsely covered with short glandular hairs; pedicels 2–4 mm long; floral bracts 1.2–3.5 mm long; bracteoles 0.8–1.5 mm long. *Hypanthium* obovate at anthesis, 2.4–4.5 mm long, 0.9–1.5 mm wide, densely glandular. *Sepals* 5, ovate, 3 free to the base, 1.2–1.8 mm long, 2 joined to within c. 0.5 mm of the apex, 1.7–2.3 mm long, densely glandular. *Corolla* white or pink with magenta marks near the base of the lobes, abaxial surface with magenta stripe, glandular, laterally paired, anterior lobes elliptic, c. 5 mm long, c. 2 mm wide, posterior lobes elliptic, c. 4 mm long, c. 2 mm wide. *Throat* white, appendages 8, white, finger-like and irregularly dilated, papillose, outer opposite pairs c. 1.5 mm long, central opposite pairs c. 2 mm long. *Labellum* boss obovate-apex cuspidate, c. 1.4 mm long, c. 0.7 mm wide; apical point and margins of smooth boss winged, oblong in outline, papillose; labellum twisted and positioned over 1 sepal. *Gynostemium* 6–7 mm long; anthers maroon, laterally paired, abaxial surface bearing a few short transparent white moniliform hairs, pollen white; stigma cushion-shaped. *Capsule* obovoid 4.5–6.5 mm long, 2–2.5 mm wide. *Seeds* light brown, ovoid-ellipsoid, longitudinally ridged and spirally twisted, 0.6–0.7 mm long, 0.4–0.45 mm diam, minutely papillose. (Figure 22)

Other specimens examined. SOUTH AUSTRALIA: W side of Mt Taylor, Kangaroo Island, 29 Dec. 1974, A.H. Burbidge 1827 (PERTH); Mt Taylor c. 10 km NW of Vivonne Bay on south coast, (Kangaroo Island), 13 Jan. 1962, T.R.N. Lothian 834 (K); 1 km from corner of Black Rock Rd, Kangaroo Island, 35° 54' S, 137° 37' E, 10 Nov. 1991, D.E. Murfet, B.M. Overton & R. Taplin 1397 (AD); Point Reynolds, Kangaroo Island, 35° 52' S, 137° 44' E, 10 Nov. 1991, D.E. Murfet, B.M. Overton & R. Taplin 1397 (AD); W of Pennington Bay, E of Point Reynolds, south coast Kangaroo Island, 35° 52' S, 137° 44' E, 18 Nov. 1988, B.M. Overton 924 (AD).

Distribution. Endemic to Kangaroo Island in South Australia.

Habitat. Grows in skeletal soils over limestone, amongst limestone rubble or deeper sandy soil over limestone in coastal shrub with *Eucalyptus diversifolia* Bonpl. Has also been observed growing 50 metres down a cliff face within the ocean sea-spray zone (B.M. Overton pers. comm. 1998).

Flowering period. November, December.

Chromosome number. Unknown.

Conservation status. Known from a number of populations, two of which – both exceptionally small populations – occur on Flinder's Chase and Mt Taylor Reserves (B.M. Overton pers. comm. 1998). The conservation status rating is currently recorded as RARE, to be investigated with the view to upgrading to VULNERABLE (Overton 1996).

Etymology. The epithet *tepperianum*, honours Gottlieb Otto Tepper (1841–1923), entomologist at the South Australian Museum who collected in South Australia.

Affinities. *Stylidium tepperianum* is the only creeping triggerplant in South Australia. Its unusual seed morphology, with the surface sculpture longitudinally ridged and spirally twisted as well as minutely papillose, may separate *S. tepperianum* from all other known creeping triggerplants.

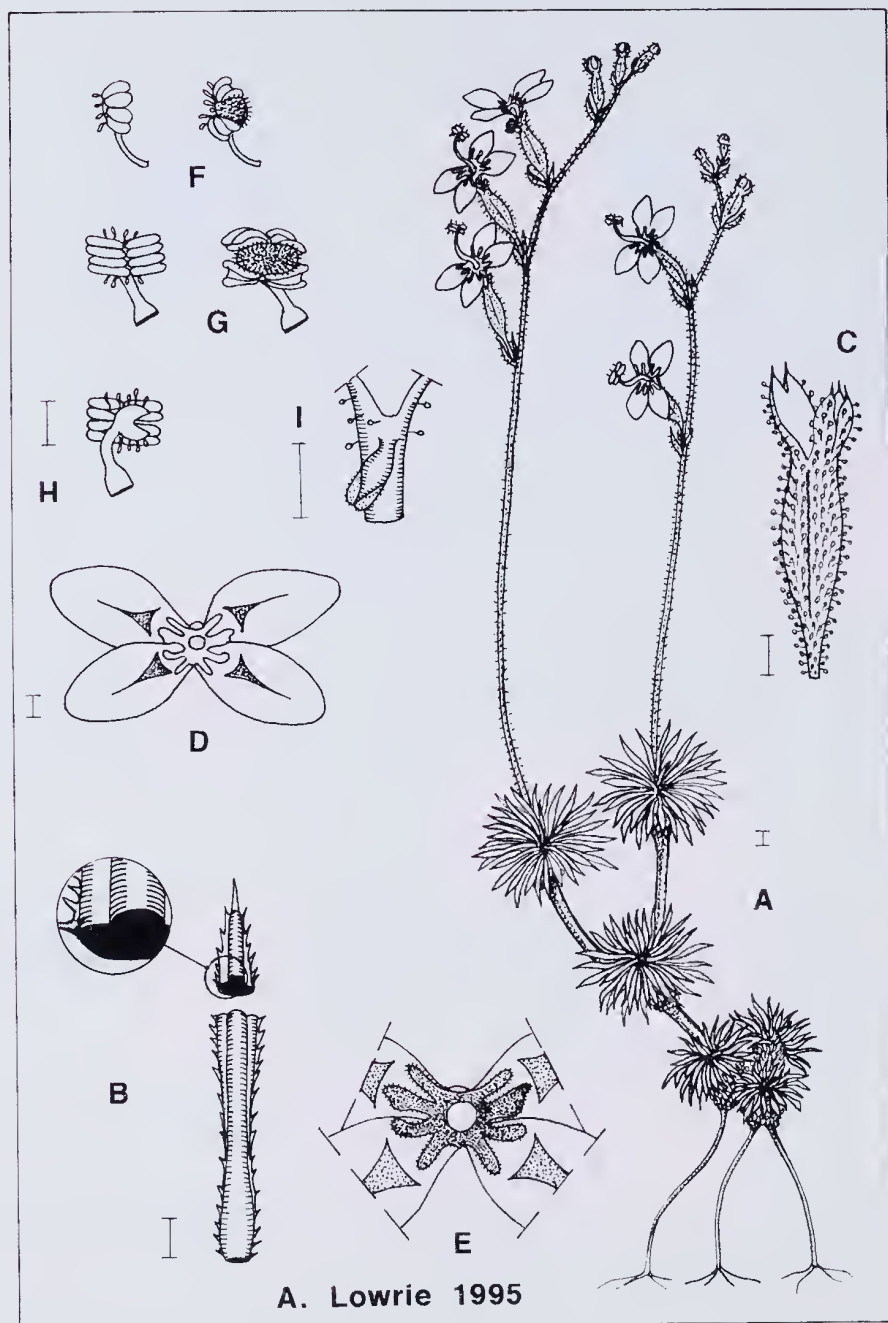


Figure 22. *Stylidium tepperianum* A - habit of flowering plant; B - leaf; C - hypanthium; D - corolla; E - throat appendages, enlarged; F - lateral view of gynostemium tip (with stigma at right); G - face view of gynostemium tip (with stigma grown out, right); H - back of gynostemium; I - labellum showing attachment to the corolla tube below the sinus and the sideways twist to clasp a sepal. Scale bar = 1 mm. Drawn from D. E. Murfet, B. M. Overton & R. Taplin 1397 (AD).

Notes. Mildbraed (1908) erroneously recorded the year of publication for *Candollea tepperiana* F. Muell. as 1881. A misreading has apparently been made between the English figure 7 and its counterpart, the German figure 1. *C. tepperiana* was described in Jan. 1887 from material collected Nov. 1886. The hand-written label (probably Tepper's original collection slip) immediately below the specimen on the lectotype sheet at MEL records the following details 'Summit & declivities of Mt Taylor, 12.11.86., flowers rose-colour, 22. *Stylidium*'. The collection date is incorrectly recorded on the typed label of the isolectotypic sheet for *Candollea tepperiana* at GOET as 15 November 1886.

Stylidium tepperianum is an early colonizer following fire and limited soil disturbances (Overton 1996).

23. *Stylidium uniflorum* Sond. (Sonder 1845: 381). *Type:* in glareosis sterilibus districtus Hay, [Western Australia], 6 November 1840, *Preiss* 2253 (*holo:* LD).

Illustrations. Erickson (1958) page 149, figure 44, 1–8. Grieve & Blackall (1982) page 745, n. 50.

Creeping caespitose perennial *herb*; forming compact colonies up to 60 cm diam., bases of leafy tufts and connecting stems buried just below the soil surface, each individual leafy tuft producing additional tufts from their bases to form larger leafy tufts, connected to other crowded leafy tufts by stolon-like stems. *Stems* between the bases of the compact leafy clumps mostly leafless, 2.5–30 mm long. *Leaves* linear, 5–7 cm long, 0.5–0.8 mm wide, apical mucro blunt, translucent white, 0.2–0.3 mm long, hyaline margins white, irregularly erose-serrate. *Inflorescence* mostly uni-flowered, rarely 2-flowered, mostly positioned a little above the leaves, peduncles 1–3, reddish, pilose, arising from the base of each leafy tuft; floral bracts and bracteoles, similar to the leaves, 2.5–5.5 mm long. *Hypanthium* oblong-falcate at anthesis, 6.5–15 mm long, 1.2–1.5 mm wide, pilose. *Sepals* 5, all free to the base, oblanceolate, 3.5–4.5 mm long, margins translucent white, irregularly erose-serrate, 2 lobes wider than the remaining 3, pilose. *Corolla* very pale pink to apricot with pinkish red marks near the base of the lobes, abaxial surface pinkish, sparsely pilose, laterally paired; anterior lobes obovate-elliptic, *c.* 6 mm long, *c.* 3 mm wide, posterior lobes oblanceolate-falcate, *c.* 9 mm long, *c.* 2.5 mm wide. *Throat* green, without appendages. *Labellum* boss pale green, broadly ovate, *c.* 0.5 mm long, *c.* 0.5 mm wide; basal appendages subulate-falcate, *c.* 0.5 mm long, *c.* 0.25 mm wide. *Gynostemium* linear-tapering 7–10 mm long, anthers green, laterally paired, abaxial surface glabrous, pollen greyish green; stigma pale green, elliptic, *c.* 0.7 mm long, *c.* 0.5 mm wide, cushion-shaped. *Capsule* oblanceolate-falcate, 12–15.5 mm long, 1.7–2.5 mm wide. *Seeds* brown, ovoid-ellipsoid, 0.6–0.7 mm long, 0.4–0.5 mm diam., smooth. (Figure 23)

Other specimens examined. WESTERN AUSTRALIA: between the 86 and 87 mile [137.6 and 139.2 km] pegs of the Albany Highway, N of Williams, 20 Oct. 1974, *S. Carlquist* 6097 (PERTH); 1 km along Guru Rd in Dryandra Forest, 8 Nov. 1993, *K.H. Coate* 319 (PERTH); Pallinup River bridge, riverside W, Hassell Highway, 28 Oct. 1983, *E.J. Croxford* 2864 (PERTH); Cranbrook Water Reserve, Cranbrook, 22 Oct. 1993, *D.J. Edinger* 863 (PERTH); Kendenup, 15 Oct. 1951, *R. Erickson s.n.* (PERTH); Broome Hill (no date) *R. Erickson s.n.* (PERTH); between Bannister and Williams Rivers, Oct. 1928, *Gardner & Blackall s.n.*, 29 Sep. 1928, *C.A. Gardner s.n.* (PERTH); Blackwood River bridge W of Dinninup on road to Boyup Brook, 13 Nov. 1175, *S. D. Hopper* 2270 (PERTH); 70 km E of Perth on Brookton Highway, Aug. 1966, *S.H. James* 66.8/18 UWA 1333 [voucher for chromosome count of $2n = 28$] (PERTH); Boxwood Hill, 17 Oct. 1987, *A. Lowrie s.n.* (PERTH); 3 km E of Cranbrook, 19 Nov 1989, *A. Lowrie s.n.* (PERTH); Dale West Rd, *c.* 2 km E of Brookton Highway, 3 Nov 1990, *A. Lowrie* 147 (PERTH); Albany Highway, 20.7 km N of Williams, 8 Oct. 1991, *A. Lowrie* 374 (PERTH); Robin's Rd near Boddington, 14 Oct. 1993, *A. Lowrie* 809 (PERTH); 85 km N of Albany, Sep. 1902,

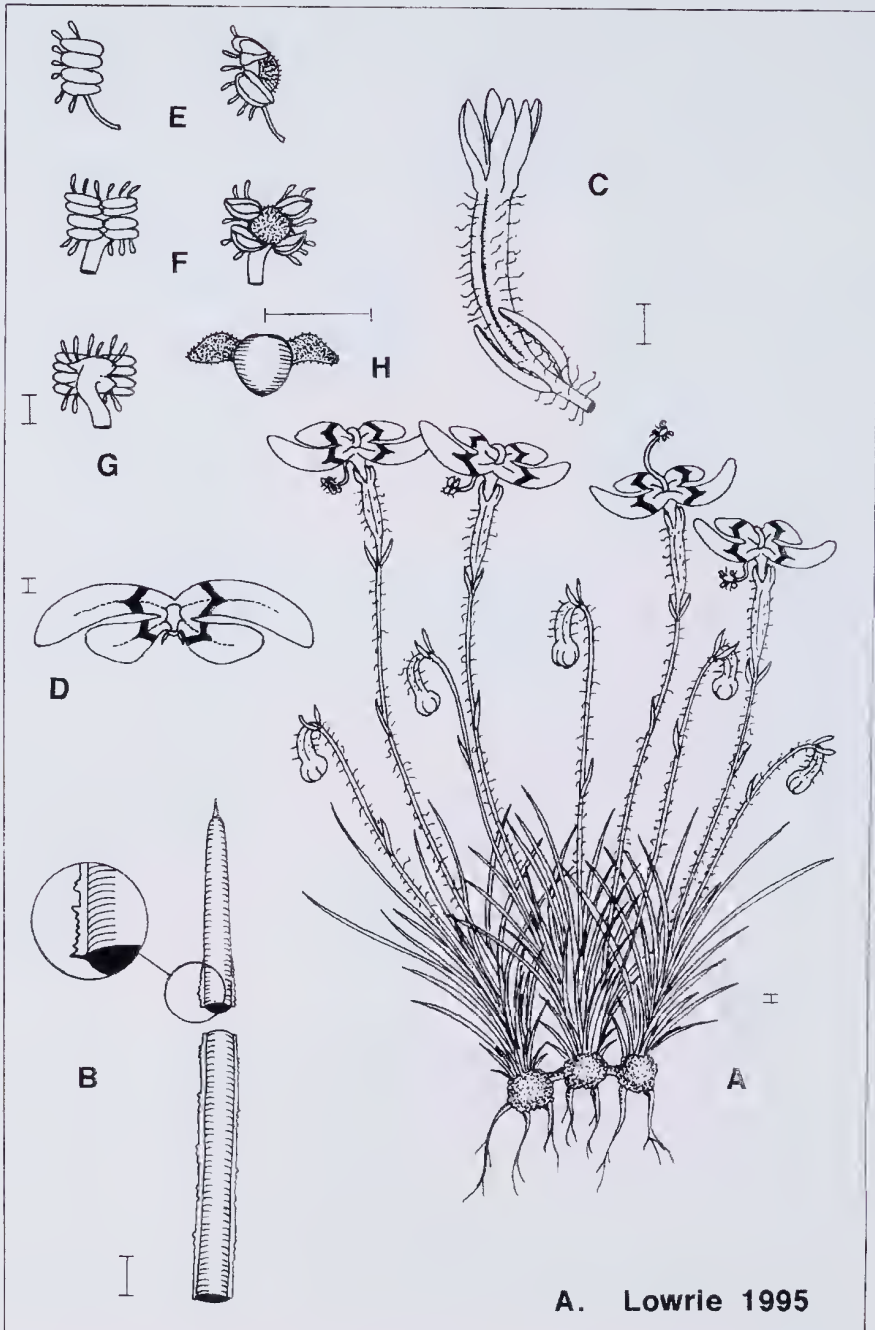


Figure 23. *Styliidium uniflorum* A – habit of flowering plant; B – leaf; C – hypanthium; D – corolla; E – lateral view of gynostemium tip (with stigma at right); F – face view of gynostemium tip (with stigma grown out, right); G – back of gynostemium; H – labellum. Scale bar = 1 mm. Drawn from A. Lowrie s.n. 17 Oct. 1987 (PERTH).

A. Morrison s.n. (PERTH); R. N. Stockwell (near Chillinup) 22 Oct. 1974, *K.R. Newbey* 4534 (PERTH); *c.* 19 km N of Lake Muir *c.* 7 km SW of Tone Bridge, 11 Dec. 1974, *R. Pullen* 9968 (PERTH); Darradup, 16 miles [25.6 km] W of Nannup, 31 Oct. 1948, *R.D. Royce* 3033 (PERTH); Tunney, S of Kojonup, 4 Oct. 1963, *R.D. Royce* 8051 (PERTH).

Distribution. Known from the region bordered by Dale west of Brookton in the north; *c.* 200 km south-east to Nannup; east *c.* 300 km to Boxwood Hill *via* Lake Muir and Kendenup; and north-west *c.* 300 km back to Dale.

Habitat. Grows in sandy loam near or mixed with laterite soils.

Flowering period. October, November.

Chromosome number. $n = 28$ [Cranbrook] and $2n = 28$ [Brookton Highway] (James 1979). Northern populations are believed to be diploid and southern populations tetraploid.

Affinities. Its nearest relative is *Stylidium megacarpum* which differs in having rosette nodes above the soil surface and leaves positioned along erect and spreading flowering stems.

Conservation status. Common and currently not under threat.

Etymology. The epithet *uniflorum* is from the Latin *unus* – one and *florus* – flower in reference to the mostly uni-flowered peduncles.

Acknowledgements

We thank the late Associate Professor Sid James, former head of the Botany Department, University of Western Australia for the published and unpublished chromosome counts and his encouragement, support and informed and stimulating discussions concerning the nature and evolution of this fascinating group of plants; Greg Keighery for assistance with chromosome counts; Beverley Overton, Denzel Murfet and Rosemary Taplin for their Kangaroo Island pressed and spirit collections of *Stylidium tepperianum* and personal communications regarding this species; Dr Sherwin Carlquist and Dr Kingsley Dixon for advice with growth habit terminologies; Paul Wilson for his assistance with the Latin diagnoses; Barbara Rye and Terry Macfarlane for their comments and revision of the manuscript; the directors and staff of the Western Australian Herbarium (PERTH), the National Herbarium of Victoria (MEL), the National Herbarium of New South Wales (NSW), the Herbarium of the Northern Territory (DNA) and the Queensland Herbarium (BRI) – particularly Dr Phillip Short, Dr Jim Ross, Dr Gordon Guymier and Clyde Dunlop who assisted AHB and KFK with both specimen loans and advice during visits.

Kevin Kenneally particularly acknowledges the directors and staff of the following European and American herbaria: B, BM, C, G, GOET, HAL, HBG, K, L, LD, M, NY, P, S, UPS for the opportunity of examining specimens and consulting literature during the tenure of a Churchill Fellowship.

Studies reported here were supported by the University of Western Australia (Dept. of Botany, Post-graduate Research Studentship held by AHB), the Department of Conservation and Land Management (CALM) and private funds of A. Lowrie.

References

- Bentham, G. (1837). Stylidiaceae. In: Endlicher, S.L., Fenzl, E., Bentham, G. & Schott, H.W. (eds) "Enumeratio Plantarum." (F.R. Beck: Wien).
- Bentham, G. (1868). "Flora Australiensis." Vol. 4. (Lovell Reeve & Co.: London.)
- Brown, R. (1810). "Prodromus Florae Novae Hollandiae et Insulae Van Dieman." (Taylor: London.)
- Burbidge, A.H. & James, S.H. (1991). Postzygotic seed abortion in the genetic system of *Stylidium* (Angiospermae: Stylidiaceae). *Journal of Heredity* 82: 319–328.
- Candolle, A.P. de (1839). "Prodromus Systematis Naturalis Vegetabilis." (Paris.)
- Carlquist, S. (1969). Studies in Stylidiaceae: new taxa, field observations, evolutionary tendencies. *Aliso* 7: 13–64.
- Diels, L. & Pritzel, E. (1905). Stylidiaceae. *Botanische Jahrbücher für Systematik, Pflanzengeschichte und Pflanzengeographie* 35: 582–599.
- Durand, T.A. & Jackson, B.D. (1896). "Index Kewensis." Suppl. 1, p. 77.
- Erickson, R. (1950). Notes on a common trigger plant with uncommon habits. *The Western Australian Naturalist* 2: 97–100.
- Erickson, R. (1958). "Triggerplants." (Paterson Brokensha: Perth.)
- Erickson, R. (1969). "The Drummonds of Hawthornden." (Lamb Paterson: Osborne Park, Western Australia.)
- Erickson, R. & Willis, J.H. (1955). Critical notes on Australian Stylidiaceae. *Victorian Naturalist* 72 (9): 130–136.
- Erickson, R. & Willis, J.H. (1956). New species and varieties of *Stylidium* from Western Australia. *Muelleria* 1 (1): 1–20.
- Fitzgerald W.V. (1902). Notes on two new species of plants indigenous to the State of Western Australia. *Journal of the Proceedings of the Mueller Botanic Society of Western Australia* 1 (9): 16–17.
- Graham, R. (1842). *Stylidium recurvum*, Recurved Stylidium. *Curtis's Botanical Magazine* 68: t. 3913.
- Grieve, B.J. & Blackall, W.E. (1982). "How to know Western Australian wildflowers. part IV with supplement." (University of Western Australia Press: Western Australia.)
- James, S.H. (1979). Chromosome numbers and genetic systems in the trigger plants of Western Australia (*Stylidium*; Stylidiaceae). *Australian Journal of Botany*. 27: 17–25.
- Kenneally, K.F. & Lowrie, A. (1994a). Rediscovery of the presumed extinct triggerplant *Stylidium merrallii* (Stylidiaceae) with an amended description of the species and its conservation status. *The Western Australian Naturalist* 19: 269–277.
- Kenneally, K.F. & Lowrie, A. (1994b). *Stylidium costulatum* (Stylidiaceae), a new tropical species of triggerplant from the Kimberley, Western Australia and the lectotypification of *S. floodii*. *Nuytsia* 9: 343–349.
- Lowrie, A. & Kenneally, K.F. (1997). Six new species of triggerplant (*Stylidium*: Stylidiaceae) from south-west Western Australia. *Nuytsia* 11: 185–198.
- Lindley, J. (1839) A sketch of the Vegetation of the Swan River Colony. *Edwards Botanical Register* Appendix to Vol. 1–23.
- Mair, K. & Pescott, R.T.M. (1969). Missing *Stylidium* specimens. *Taxon* 18: 605–607.
- Mair, K. & Pescott, R.T.M. (1970). Missing *Stylidium* specimens. *Taxon* 18: 824.
- Mildbraed, J. (1908). Stylidiaceae. In: Engler, E. (ed.) "Das Pflanzenreich." IV No. 278 (35), 98 pp. (H.R. Engelmann (J. Cramer: Weinheim.)
- Mueller, F.J.H. von (1859). "Fragmenta Phytographiae Australiae." Vol. 1. (Government Printer: Melbourne.)
- Mueller, F.J.H. von (1883). "Systematic Census of Australian Plants." (Government Printer: Victoria.)
- Mueller, F.J.H. von (1887). *The Chemist and Druggist of Australasia* 2: 15.
- Overton, B.M. (1996). *Stylidium tepperanum* (F. Muell.) Mildbr., Stylidiaceae Kangaroo Island Trigger Plant. *The South Australian Naturalist* 70(3/4).
- Pate, J.S., Weber, G. & Dixon, K. (1984). In: Pate, J.S. & Beard, J.S. (ed.). "Kwongan Plant Life of the Sandplain." (University of Western Australia Press: Nedlands, Western Australia.)
- Planchon, J.E. (1854). *Flore des Serres et des Jardins de L'Europe* 10:81. Subt. 999.
- Scott, M.B. (1915). In: *Bulletin of Miscellaneous Information* 1915: 90–91.
- Sharr, F. R. (1996). "Western Australian plant names and their meanings." Enlarged edn. (University of Western Australia Press: Nedlands, Western Australia.)
- Sonder, O.W. (1845). Stylidiaceae R. Br. In: Lehman, C. (ed.) "Plantae Preissianae." (Meissner: Hamburg.)

Alphabetical index of current names and synonyms

Full treatment of species page numbers in **bold**.

<i>Candollea adpressa</i> (Benth.) F. Muell. -----	96
<i>Candollea breviscapa</i> (R. Br.) F. Muell. [as <i>breviscapa</i>] -----	101
<i>Candollea bulbifera</i> (Benth.) F. Muell. -----	111
<i>Candollea repens</i> (R. Br.) F. Muell. -----	139
<i>Candollea tepperiana</i> F. Muell. -----	150
<i>Stylidium adpressum</i> Benth. -----	96
<i>Stylidium adpressum</i> var. <i>patens</i> R. Erickson & J.H. Willis -----	98
<i>Stylidium adpressum</i> Mildbr. -----	98
<i>Stylidium breviscapum</i> R. Br. -----	101
<i>Stylidium breviscapum</i> var. <i>erythrocalyx</i> Benth. [as <i>breviscapus</i>] -----	101
<i>Stylidium breviscapum</i> var. <i>involucratum</i> (F. Muell.) Mildbr. -----	101
<i>Stylidium bulbiferum</i> Benth. -----	111
<i>Stylidium bulbiferum</i> Benth. f. <i>bulbiferum</i> Mildbr. -----	111
<i>Stylidium bulbiferum</i> Benth. var. <i>bulbiferum</i> Sond. -----	111
<i>Stylidium bulbiferum</i> var. <i>ciliatum</i> [published as 'β <i>ciliatum</i> '] Sond. -----	118
<i>Stylidium bulbiferum</i> var. <i>macrocarpum</i> Benth. -----	120
<i>Stylidium bulbiferum</i> f. <i>macrorrhizum</i> Mildbr. -----	111
<i>Stylidium bulbiferum</i> var. <i>septentrionale</i> Mildbr. -----	123
<i>Stylidium burbridgeanum</i> Lowrie & Kenneally -----	116
<i>Stylidium choreanthum</i> R. Erickson & J.H. Willis -----	148
<i>Stylidium cilium</i> Lowrie, Burbidge & Kenneally -----	118
<i>Stylidium cygnorum</i> W.V. Fitzg. -----	98
<i>Stylidium dielsianum</i> E. Pritz. -----	126
<i>Stylidium dielsianum</i> f. <i>ebulbosum</i> Mildbr. -----	106
<i>Stylidium diplectroglossum</i> (R. Erickson & J.H. Willis) Lowrie, Burbidge & Kenneally -----	132
<i>Stylidium eriopodum</i> DC. -----	103
<i>Stylidium flagellum</i> Lowrie, Burbidge & Kenneally -----	136
<i>Stylidium induratum</i> M. Scott -----	128
<i>Stylidium involucratum</i> F. Muell. -----	101
<i>Stylidium megacarpum</i> Lowrie, Burbidge & Kenneally -----	120
<i>Stylidium neglectum</i> Mildbr. -----	106
<i>Stylidium pingrupense</i> Lowrie, Burbidge & Kenneally -----	138
<i>Stylidium proliferum</i> DC. -----	112
<i>Stylidium pseudosacculatum</i> Lowrie, Burbidge & Kenneally -----	143
<i>Stylidium recurvum</i> Graham -----	112
<i>Stylidium recurvum</i> var. <i>ciliatum</i> Planchon -----	118
<i>Stylidium radicans</i> Sond. -----	139
<i>Stylidium repens</i> R. Br. -----	139
<i>Stylidium repens</i> var. <i>diplectroglossum</i> R. Erickson & J.H. Willis -----	132
<i>Stylidium repens</i> var. <i>sacculatum</i> (R. Erickson & J.H. Willis) Carlquist -----	146
<i>Stylidium sacculatum</i> R. Erickson & J.H. Willis -----	146
<i>Stylidium septentrionale</i> (Mildbr.) Lowrie, Burbidge & Kenneally -----	123
<i>Stylidium stowardii</i> M. Scott -----	109
<i>Stylidium tepperianum</i> (F. Muell.) Mildbr. -----	150
<i>Stylidium warriedarensense</i> Lowrie, Burbidge & Kenneally -----	131
<i>Stylidium uniflorum</i> Sond. -----	153